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ABSTRACT

Presented in this report is a study of the North Carolina school finance system and related areas and recommendations for assuring more equitable financial support for an equal educational opportunity for every child in the State. An overview of the Commission's study is provided. Certain aspects of the public school system in North Carolina are compared to the systems in other States. The status of teachers, particularly teacher quality, and the status of various educational programs throughout the State are examined. The calculation of average costs, added costs, and cost indices for each program area are presented. Alternative measures of fiscal capacity and the degree to which they would effect equalization aid are analyzed. The development of a fixed-level equalization program that would meet both educational needs and program costs is discussed. Recommendations are outlined for each of these areas. Numerous tables list statistical data gathered during the study. (Author/EB)

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Access To Equal Educational Opportunity In North Carolina

The Report of the Governor's Commission on Public School Finance

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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The Honorable James B. Hunt, Jr.
Governor of North Carolina
State Capitol
Raleigh, North Carolina 27611

Dear Governor Hunt:

It is an honor to present the report of the Governor's Commission on Public School Finance.

According to your charge, the Commission has sought to study and prepare recommendations for "...extending opportunity to ensure that each student, regardless of where he or she resides in this state, will have access to educational programs which will permit each child to reach his maximum potential."

The recommendations and information in this report represent the thoughts of hundreds of North Carolina citizens as well as the advice of experts, position papers, and opinions from public hearings.

Members of the Commission and many other citizens look forward to your leadership in assuring, to each child, equal access to educational opportunity. We appreciate this opportunity to serve our Governor and the people of this State.

Very truly yours,

Glenn Keever D. L. Stallings Doris H. Tew
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"The . . . most important reason for extending educational opportunity is the obligation we have to ensure that each student, regardless of where he or she resides in this state, will have access to educational programs which will permit each child to reach his maximum potential."

Governor James B. Hunt, Jr.
June 3, 1977

INTRODUCTION

The Governor's Commission on Public School Finance in North Carolina, appointed by Governor James B. Hunt, Jr., and the State Board of Education in June, 1977, submits this report of its findings and recommendations to the Governor and the State Board of Education, October 1, 1978. At the Governor's request to study the matter in depth, the Commission undertook "to study the North Carolina school finance system and related areas and prepare recommendations which (would) assure more equitable financial support for an equal educational opportunity for every child in the state." The Commission consisted of fourteen members, including two senators and one representative of the 1977 General Assembly, nine citizens representing organizations and regions of the state, and the Superintendent of Public Instruction and the Assistant Controller.

In order to conduct its work, the Commission has sought and received public opinion, experts' advice, work from study committees, assistance from educational and other professionals, and data from state agencies. Hundreds of North Carolina citizens have voiced their opinions in public hearings, opinionnaires, and position papers on this topic. The Commission has utilized information from various state agencies that have responsibilities related to the financing of public schools. The Commission has obtained expert opinion from university and agency spokesmen within the state and at the regional and national level.

Whereas the Commission assumes responsibility for its report, it recognizes with appreciation the assistance of many informed, dedicated North Carolinians without whom this report and its recommendations could not have been completed.

Overview of Commission Study

Conclusions and Recommendations

In North Carolina, as in the other states, public education is a state function subject to legislative control. This authority is exercised through appropriate delegation to the State Board of Education through which educational programs are duly prescribed and regulated. The responsibility of financing public education is vested in state government to a larger extent than in most states.

The method of financing schools in North Carolina is relatively uniform and equitable. The great expenditure disparities so widely found among school districts in some states are not present in North Carolina.

Educational Needs, Adequacy of Resources, and Fiscal Inequality

Although North Carolina has a more equitable system of educational finance than most other states, current methods can be improved. Certain trends have developed which, if continued, could reduce educational equity for children who happen to reside in less fortunate school districts across the state. These trends are seen in three basic areas: educational needs, adequacy of resources, and fiscal inequality. To accommodate the educational needs of all pupils is a goal which should underlie any system of financing. To reduce the state role in funding would intensify local fiscal inequalities and reduce the abilities of many school districts to deal effectively with educational needs. The adequacy problem is related to sufficient resources for education and the tendency for the state's fiscal role in education to diminish as pressures for other governmental services mount.

North Carolina's system of financing its schools cannot be categorized neatly. It is viewed as being a combination of a pupil unit, teacher unit, and personnel budget approaches. The primary unit of measurement is average daily membership (ADM) of pupils, from which most allotments are calculated. The base allotment for the formula is the teacher position which is a weighted derivative of the ADM. For example, six teacher units are allocated in grades 1 through 3 for the first 165 pupils, plus one teacher for each additional 26 pupils in ADM. In grades 4 through 8, six teachers are allotted for the first 165 pupils, plus one additional for each 29 pupils in ADM. In high school the ratio changes to four teachers for the first 80 pupils for the first junior or senior high school, three teachers for the first 60 pupils for each additional high school and one teacher for each additional 30 pupils. A salary is allotted to each of the teaching positions according to certificate level and experience of the teacher holding the position. A school district employing teachers with more experience and training will receive more money per pupil than a district employing teachers with less experience and training.

In addition to teaching positions the state formula allocates other positions to local school districts for administrators, supervisors, and clerks. For example, supervisory and principal positions are awarded in accordance with the number of teaching positions. The salary amount for a principal is determined by his certification, experience, and the number of state-allotted teaching positions in the school.

Sixty-three line-item allotments are used to distribute funds to local school districts, excluding maintenance and capital outlay. Each of the line-items has independent criteria or standards for distribution of funds. Several of the line-item alloca-

tions are programmatic in nature and provide categorical funding for physical education, kindergarten, driver training and safety, and trainable mentally retarded children. Allocations of salaries for custodial services are set at a specified amount per state-allotted teacher position. Additionally, specific allocations are made for fuel, water, light, power, janitor's supplies, and telephones, each of which is based on the number of state-approved teacher positions in each school district. Wages for school bus drivers are allocated at a standard rate per hour.

The complex line-item system has three important limitations. First, the many standards and criteria used do not focus directly on educational needs and program costs. While accommodation of educational needs is undoubtedly accomplished, the method of allocation does not identify and provide funds for designated needs of pupils in accordance with verified costs. Second, due to the volume of formulas and accountability standards, the many line-items may tend to restrict local prerogative. Third, the system of many small categorical grants does not present a comprehensive approach to funding.

The important question of fiscal equalization is not addressed in the present distribution formula. The present system has a proliferation of line-items, lacks direct relationship to educational needs and costs, and does not provide for fiscal equality for local funds. The necessity of introducing greater equality into the fiscal process was the primary motivation for initiation of the present study.

Equitable Financing for a Sound Educational Program

A school finance program should be analyzed in light of certain basic principles if equal educational opportunity is to be provided to all children. Five principles delineated in the Equity Guidelines published in federal regulations (Sec. 842, Part D, Title VIII, Education Amendments of 1974, 30 U.S.C. 246) are: adequacy, recognition of cost variations, comprehensiveness, equalization of financial ability, and efficiency. Six criteria developed by the National Educational Finance Project include equitable budgetary planning, objectivity, integration with federal funds, recognition of educational needs and cost variations, fiscal equalization, and comprehensiveness of program.

Several criteria governing the distribution of tax dollars for education appear to be important in a distribution formula. A formula must address as nearly as possible differing educational needs and provide funding on a program cost basis which can be expected to meet the needs and to assure efficient use of taxpayer dollars. A substantial degree of flexibility should be maintained so as not to restrict local response to unique conditions or to limit local aspiration in advancing public education. A proper balance must be created between state assurance of reasonably uniform educational opportunity and local discretion. A child should not be limited by local fiscal incapacity. Finally, the state system of education must be funded adequately, and the role between state and local financing must be delineated so as not to restrain either educational or economic growth.

Educational Needs and Opportunity

Educational programs and services should provide for equal educational opportunity throughout the state. While mathematical uniformity is not possible, steps should be taken to assure each child that opportunity will be maximized and inequities will be limited. Individual educational needs of children are, of course, the basic consideration of any method of financing. A substantial educational and fiscal burden can conceivably occur in a school district which has an excessive ratio of children with unusual educational deficiencies. Since the incidence of educational needs from district to district is not uniform and the cost of providing services varies substantially, the state school finance

program must be sensitive to both needs and costs. Therefore, educational equity requires that uniformity of educational offering should be maintained in all school districts except where differing incidences of educational needs require additional funding to meet excessive costs.

Sparsity of Population and Fiscal Inadequacy

The educational curriculum of North Carolina public schools is affected by sparsity of population and fiscal inadequacy of many school districts. Substantial differences among school districts exist in course offerings in the areas of cultural arts, foreign languages, and certain elementary and exceptional areas. Pupil sparsity greatly restricts the number of course offerings in many school districts. The present fiscal system is not fully responding to the legitimate program and course cost differentials which exist in many districts.

Teachers With Experience and Training

Good teachers must be attracted to and evenly distributed throughout the state. Although the exact characteristics of the most desirable teachers are difficult to assess, educational attainment and experience of teachers are important characteristics. If these two measures are used as criteria, the teacher force of North Carolina appears to be well-distributed. However, those teachers with graduate degrees tend to be found in larger percentages in the more affluent and populous school districts and in close proximity to teacher training institutions.

Need for Equal Educational Opportunity for All Children

The state school finance system should be improved to insure an orderly and integrated distribution of funds which will provide for comprehensive and efficient allocation to meet educational needs. Funding should be pupil-oriented and responsive to legitimate program costs and fiscal ability variations. Special needs are present in communities with sparse population or low fiscal abilities.

The provision of equal educational opportunity throughout the state does not require restructuring the state school finance system. Modifications should be made in order to directly relate program needs and costs to the allocation formula in the *Basic Aid Fund*; a second level *Equalization Fund* should be incorporated which distributes money on the basis of fiscal capacity of the county. Under the proposed system funds would be allocated under a *Basic Aid Fund* for documented educational needs and program costs in each school district supplemented by an *Equalization Fund* which would help correct for fiscal disparities among counties. Thus,

Basic Aid Fund + Equalization Fund = State Allocation

1) **The Commission recommends a state school finance system that provides equal educational opportunity to all children, taking into account legitimate program costs and variations in fiscal ability among local adminstrative units, through continuation of a *Basic Aid Fund* and the establishment of an *Equalization Fund*.**

Need for a Comprehensive Programmatic Method of Funding Local Programs

A funding formula should respond to measurable needs of children and provide for the educational programs and services necessary to accommodate these needs. The present system of funding is characterized by line-item allocations which are not integrated and are difficult to relate to either educational needs or program costs. Without a comprehensive formula with interrelated

components, evaluation as to efficiency and educational effectiveness is difficult.

The present method of allocation which makes up the state *Basic Aid Fund* should be redefined into a comprehensive programmatic method of funding which is pupil-centered and provides funds based on program costs. Local school districts should be freed of some of the financial accountability controls for the many line-item allocations.

The State Board of Education should monitor and assist local school districts in attaining improved educational programs according to program standards. Correspondingly, each local school district should be charged with the responsibility for properly assessing educational needs of children and providing educational programs which are designed to meet those needs. Program audits should be conducted in line with appropriate standards.

2) The Commission recommends that the *Basic Aid Fund* be allocated to each local administrative unit on the basis of a comprehensive programmatic method of funding based on program costs rather than line-item allocations.

Need for Allocation of State Aid Through a Weighted Instructional Unit

A pupil-oriented program funding approach should be utilized to distribute funds under the *Basic Aid Fund*. Program costs differences should be recognized through a weighted classroom Instructional unit. For funding purposes, all pupils would be counted in the regular program (that is, grades K-3, 4-8, or 9-12) with the added costs of exceptional and/or vocational education recognized through supplemental units. Recommended cost differentials are reflected in the following ratios which should be reevaluated annually and modified to respond to changing cost trends or to accommodate new state educational policies.

Recommended instructional weights:

Basic Program Units	Weighted Instructional Unit
Grades K - 3	1.23
Grades 4 - 8	1.00
Grades 9 - 12	1.23
"Add-on" Exceptional Child Units	
Level I	
Trainable Mentally Retarded, Visually Handicapped	5.40
Level II	
Emotionally Disturbed, Physically Handicapped, Hearing Impaired, Hospitalized/ Homebound	2.70
Level III	
Educable Mentally Retarded, Learning Disabled	1.35
Level IV	
Speech Impaired	0.45
Level V	
Gifted and Talented	0.05
"Add-On" Vocational Units	
Agriculture	0.30
Distributive	0.27
Health	0.36
Home Economics	0.28
Business and Office	0.30
Technical	0.32
Trade and Industrial	0.32

Calculations of Weighted Instructional Units: (ADM ÷ 27) × Weighted Factor = Weighted Instructional Unit.

3) The Commission recommends that the *Basic Aid Fund* be allocated through the use of a weighted classroom instructional unit. Cost differentials for weighted program units should be evaluated annually.

Need for Quality Professional Staff

Quality of the teaching and administrative force is the most important element of a productive educational program. To attract good teachers and administrators, local school districts must maintain competitive salaries; and the state must provide the necessary resources for attracting, training, and maintaining good teachers. The fiscal effort in North Carolina for teachers' salaries is presently higher than both the national and regional averages. Although the purchasing power of the teacher's salary has increased slightly over the last ten years, teachers' salaries have not gained appreciably against inflation.

Quality of the teaching force among school districts should be assured and state financial resources should be utilized to correct imbalances due to fiscal incapacity or other measurable inequities. Teachers' salaries and fringe benefits should be funded at a level sufficient to attract qualified persons who would prefer to be teachers but for economic reasons turn to other employment.

Parity in the quality of the teaching force among school districts should be a basic objective of the state. Financial resources should be utilized to correct imbalances due to district fiscal incapacity or other measurable economic circumstances. A factor maintaining the successful tradition of the state salary schedule which rewards for training and experience should be included in the *Basic Aid Fund*. A training and experience matrix should be superimposed on the *Basic Aid Fund* for each school district so as not to penalize a district for employing more qualified teachers. A matrix should be constructed in which each teacher in each school district is classified in accordance with professional training and experience. The categories would be weighted and an index would be computed for each school district. The weighting could be adjusted for more emphasis on employing and retaining teachers with certain levels of training and experience. Any disequalizing tendencies of this factor should be corrected in other features of the *Basic Aid Fund*.

4) **The Commission recommends that professional educators from each local administrative unit be classified in accordance with professional training and experience, utilizing a *Training and Experience Matrix* with the *Basic Aid Fund*. An index computed from the categories of the *Matrix* should be computed for each local administrative unit and should serve as a basis for state funding.**

Need for a Factor for Isolated School Costs

School districts which could be classified as densely or somewhat densely populated were found to have an advantage over more sparsely populated districts in terms of quality of the teaching force and equivalent services. Certainly, comprehensive educational programs and the most highly qualified teachers cannot be maintained in many remote isolated areas because of costs being prohibitive. On the other hand, the state can and should provide greater funding for essential, isolated schools in order that the attending children will have a reasonable level of educational services.

A practice used in the current funding system to assist essential schools in sparsely populated areas should be continued through the use of an essential, isolated school factor in the Basic Aid Formula. A fiscal adjustment should be provided for essential, isolated schools and not merely for sparsely populated school districts. If a school district must maintain an essential, isolated school then it should receive a fiscal adjustment so that the educational quality will not be inferior or that the financial burden not fall entirely on the local school district.

The State Board of Education should adopt regulations specifying criteria for designation of essential, isolated schools. Such criteria should in-

clude factors such as geography (accessibility), transportation (time and distance), and health and safety conditions. Such designations should be provided for at least two levels of schools, elementary and secondary. Upon approval by the State Board of Education, school districts with qualifying schools should be allocated "add-on" funding units.

5) **The Commission recommends that the State Board of Education adopt regulations specifying criteria for essential, isolated schools. Upon Board approval, local administrative units with qualifying schools should be allocated "add-on" weighted classroom instructional units in accordance with adopted formulas for elementary schools and for secondary schools.**

Need for State Equalization Funds

North Carolina's relatively high level of fiscal equalization among school districts is derived from reasonably good school district organization coupled with a high percentage of state level funding. Ironically, North Carolina is the only state, with the exception of Hawaii, which does not have an allocation feature in the state aid formula that equalizes local taxpaying ability. Variations in local fiscal capacity produce over $250 million of unequalized local contribution. If all school districts exploited their full property tax potential and were receiving maximum benefit from the 1 percent sales tax, local fiscal inequality would approach the one-half billion dollar mark. This inequality of fiscal resources is reflected in the classroom where a broader curriculum is found in school districts with greater fiscal capacity and expenditures. This situation should be corrected toward a goal of fiscal neutrality; that is, no child's education should be a function of fiscal ability of the local school district.

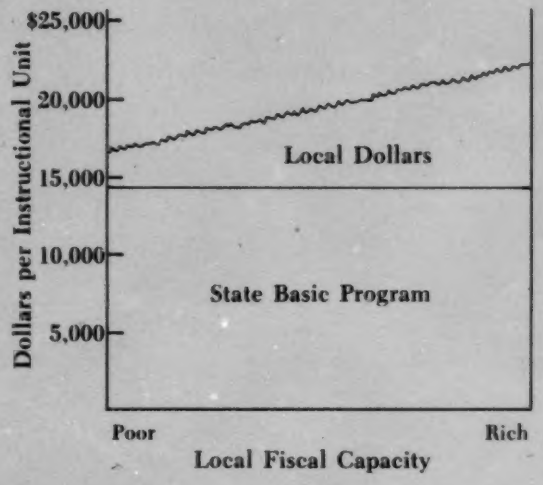
In order to accomplish this the *Basic Aid Fund* should be supplemented by a second level *Equalization Fund*. Money would be allocated to local school districts based on their relative fiscal abilities, with the poorest receiving commensurately more funds so as to guarantee a certain level of local resources for local effort. Initially, it is recommended that the state allocate approximately $60 million for this purpose with the amount increasing annually as the state economy will justify. A hold-harmless provision should be implemented to assure that no school district would receive less state funds from the *Basic Aid Fund* plus the *Equalization Fund* than it did in the year immediately preceding implementation.

The total proposed school finance system is illustrated in the following charts. Chart I shows the present *Basic Aid Fund* without the proposed supplementary *Equalization Fund*. Charts II and III show the impact of fiscal equalization at $60 million and at $120 million levels.

6) **The Commission recommends that the state, through a policy of fiscal equaliza-**

CHART I

PRESENT FUNDING METHOD



tion, make educational programs more equally accessible to all children regardless of where they live or the economic condition of their parents or community. To that end, we recommend that the state establish an *Equalization Fund* and require local effort for participation. A hold-harmless provision should be implemented to assure that no local administrative unit would initially receive less state funds from the *Basic Aid Fund* plus the *Equalization Fund* than it did in the year immediately preceding implementation of the weighted instructional unit.

Need for an Equalization Fund

In order to implement an equalization program a valid and reliable measure of local fiscal capacity must be found. Since the major portion of local revenues is derived from property taxation, it is certain that equalized assessed valuation of property must be one component of measurement of local fiscal ability.

Two basic approaches have been used in measuring fiscal capacity both among and within states. One approach defines capacity in terms of economic indicators such as income, wealth, and consumption while the other approach defines capacity in terms of the tax bases available to the governmental unit. Where the economic indicator is in fact a tax base there is no difference between the two; however, if the governmental unit is unable to levy a tax which is measured by an economic indicator, problems of taxpayer equity may arise. The accessible tax base approach has been the standard method of determining local fiscal capacity for state school finance equalization programs.

The most feasible alternatives for North Carolina appear to be (a) the equalized assessed valuation of property, (b) equalized assessed valuation of property plus the sales tax or some percentage of

CHART II

RECOMMENDED FUNDING METHOD
$60 MILLION
EQUALIZATION FUND

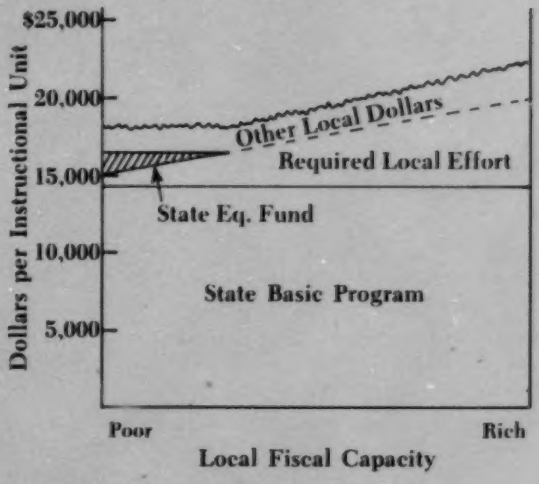
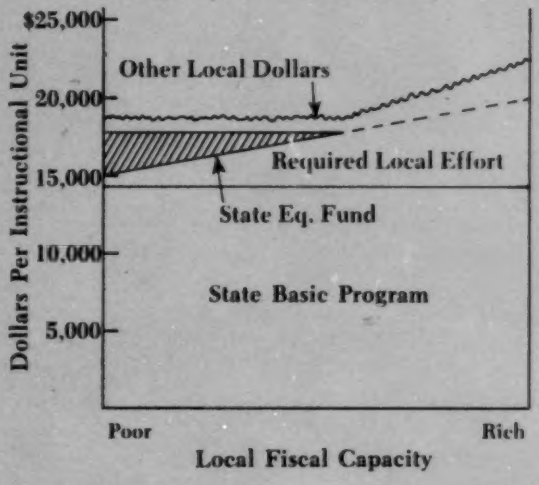


CHART III

RECOMMENDED FUNDING METHOD
$120 MILLION
EQUALIZATION FUND



the sales tax, and (c) property plus sales with a factor entered representing the county contribution to the state general fund per pupil in relation to the state median. The last alternative is the preferred approach based on a comparison of data using the three alternatives. Counties which are poorer as determined by both property and general fund contribution are judged to have lower fiscal ability than other counties with low property valuation and middle or high general fund contribution. Using this approach, disparities among counties are slightly greater than if property valuations plus sales per pupil are used alone. This increase reflects the fact that counties in North Carolina with access to low property and sales tax bases also tend to have relatively low ability as measured by income or wealth.

For equalization purposes it is recommended that the state utilize a measure of local fiscal capacity based on property plus sales as the major tax sources accessible to the counties, modified by an adjusted general fund contribution factor to account for variations in local ability-to-pay. This measure would be computed by multiplying a property plus sales index for each county by an adjusted county contribution to state general fund factor. Steps in the calculation of the measure are as follows:

1. Equalized property valuation, taxation retail sales, and contribution to the general fund per pupil within each county are determined and scaled into indexes with 1.0 representing the state median for each respective fiscal capacity index.
2. The equalized property valuation and taxable retail sales indices are given weights of .8 and .2, respectively, and summed to obtain a property plus sales index of local access to taxable resources. The respective weights for the property and sales factors were selected to reflect the relative contribution of these taxes to county level revenues.
3. An adjusted state general fund contribution index is computed by reducing, through the use of a factor of two, the difference between each county's contribution to the state general fund per pupil and the state median contribution per pupil.
4. The recommended measure of local fiscal capacity is calculated by multiplying the property plus sales index for each county by the county's adjusted state general fund contribution index.

7) The Commission recommends that the state, in order to gauge effort against ability, measure local fiscal capacity by a property-sales tax formula, modified by an adjusted general fund contribution factor.

Need for Equity Among Taxpayers

Taxpayer equity is essential to a good state school finance program. When taxpayers are burdened by regressive taxes the results will affect the quality of education. The nature of the property tax with its difficulty of administration and its regressivity makes it objectionable to taxpayers. This problem, in addition to the need to equalize property valuations among counties, requires that the legislature fund the Department of Revenue and charge it with the responsibility of performing sales-assessment ratio studies and annually certifying an appropriate property valuation for each county. Such certification should coordinate with the calendar of the State Board of Education in order that allocation of the *Equalization Fund* to local school districts be timely.

8) The Commission recommends that the legislature, in order to maintain essential equity among property taxpayers, require the Department of Revenue to perform annual sales-assessment ratio studies and to certify an appropriate level of property valuation for each county.

Need for State Responsibility for Financing Schools

Basic funding for the public schools of North Carolina has come from tax revenues collected at the state level. This tradition shows the strong belief of the people of the state that the public schools are a statewide responsibility and that a child's education should not be dependent on local financial conditions. As the costs of education have risen and state tax resources have been spread over more public services, the percentage of state level funding for public schools has been reduced. Further movement in this direction could create inequities both to the student and the taxpayer. Equality of educational opportunity is enhanced by reducing reliance on unequal local resources.

9) **The Commission recommends that the state of North Carolina adhere to and strengthen its provision of a high level of basic school support from taxes collected at the state level.**

Need for Continuance of State Fiscal Effort

North Carolina has provided reasonably high statewide financial effort for the support of the public schools. Taxpayer commitment for the public schools exceeds that of other states in the region and is above the national average, even though the overall tax burden is only 72 percent of the national average. The wisdom of this investment is reaffirmed by the relative strength of North Carolina's social and economic condition as compared to most other southern states. Since the future economic well-being of the state is dependent on the production of human capital, North Carolina should maintain its fiscal effort for financing the public schools.

10) **The Commission recommends that the state of North Carolina maintain its fiscal effort for financing the public school system of the state.**

Need for State Participation in School Facility Costs

Available data indicate that school construction will continue to be a serious issue for school districts in the decade ahead. Equal access to schools, energy conservation, renovation costs, and new program demands are factors related to school construction needs. Increased costs for building sites, materials, and labor are anticipated. Careful planning and use of school construction monies are an economic necessity.

A system of local initiative supported by periodic state help through statewide bond issues has developed in North Carolina. The initiative for school construction should continue to reside in local authorities. The method of financing this local initiative is also a major decision for local authorities.

Since 1970 the state has provided about 29 percent of the total expenditures for capital outlay. Local districts have presented bond issues for local vote; since 1972, districts have passed $137,575,000 in local bond issues.

Since 1949 the citizens of North Carolina have approved 475 million dollars in statewide bond issues for capital outlay funds for schools. It is estimated that one billion dollars more is needed to have all students in safe, pleasant school facilities.

11) **The Commission recommends that the state, through periodic issue of state bonds, continue to provide a reasonable proportion of statewide facility costs. Based on precedent it would seem that the state's reasonable proportion will fall between 25 and 40 percent of the overall cost of school construction. The next statewide bond**

referendum should be held in 1979 or as soon as practical thereafter. School facility funds should be allocated to each school district on the basis of average daily membership.

Need for Standards for School Facilities

Adequate facilities and attractive, wholesome environments in which learning/teaching can occur require that state and local resources be applied regularly through systematic, on-going planning. Local authorities must continue to shoulder a major share of the responsibility for school facilities, but the state has an obligation to help.

In assessing building needs and developing long-range plans, local school administrators and boards of education have used the professional services provided by the State Department of Public Instruction and other consultants. Standards are used as guidelines for life expectancy of buildings, for types of programs to be accomplished, and for adequacy of site.

12) **The Commission recommends that all school construction projects approved by the State Board of Education meet qualitative and quantitative standards for cost effectiveness and design. Regular reports and inventories should be made on the status of school facilities to the State Board of Education and the General Assembly.**

Chapter 1

Equal Educational Opportunity In North Carolina

Equality of opportunity and justice are cornerstones of our American democracy. A free public education system for all children has provided an avenue by which the ideals of equality and justice are expressed. The Constitution of the state of North Carolina (1776), through powers implicitly delegated by the United States Constitution, speaks to the responsibility of the state for a uniform system of free public schools with equality of opportunity for all students.

During the last three decades, the question of equality of educational opportunity for all children has received increased national attention. Such attention has been manifest by state and federal court rulings, by state and federal legislation, by national platforms of political parties and citizens' groups, and by results of research studies. State and national policies have been reexamined and reformulated in regard to equality of educational opportunity regardless of the sex, race, religion, or handicaps of the children to be educated.

The relationships between the equality of educational opportunity and the wealth of school districts were the central issues in a landmark decision made by the California Supreme Court in *Serrano v. Priest* (1971). The *Serrano* decision was that the quality of a child's education could not depend on the resources of the individual school district but must be dependent upon the wealth of the state as a whole. Within 18 months of the *Serrano* decision, 11 other court rulings were made regarding the relationship of equal opportunity to the wealth of school districts in a state.

Through Section 842 of Public Law 93-380, funds were made available to individual states for the purpose of conducting studies and developing plans to address the question of equity in school finance. The relationship of the financial structure of the public school system to its capacity to provide equal opportunities for children is under examination currently in these states.

Governor James B. Hunt, Jr., of North Carolina, has pointed up the importance of this issue by indicating that it was "one of assuring equality of educational opportunity throughout the state no matter in which district a pupil resides." He has indicated that it was a matter which "should be studied in depth by a special commission on the financing of public school education in North Carolina" (1976). A Governor's Commission was authorized by Governor Hunt in June, 1977, to study the financial system of the North Carolina public schools and to report its recommendations by October, 1978.

Purpose of the Study

The purpose of the Governor's Commission on Public School Finance, as stated by the Commission, was "to study North Carolina's school finance system and related areas and prepare recommendations which will assure more equitable financial support for an equal educational opportunity for every child in the state" (The Commission, March 7, 1978). According to the Commission, a plan was to be devised and implemented for financing public education which satisfied the requirement for equal educational opportunity and which improved the equity and fiscal neutrality by which financial resources were allocated to school districts (North Carolina State Board of Education, 1977).

Equality of educational opportunity has been classified by Johns (1972), along with equality of economic opportunity and equality in receiving the benefits of the Bill of Rights of the United States Constitution, as a necessary condition for freedom. The right to equal educational opportunity is as much a part of the American dream as equal rights for life, liberty, and justice according to Johns.

Fiscal neutrality is a court-defined standard in school finance (referred to as the *Serrano* criterion). This term means that educational resources which are provided to a child should not be a function of the wealth of the school district where he happens to live, but rather a function of the wealth of the state as a whole.

Utilizing these definitions, the study of the Governor's Commission on Public School Finance

has been directed toward the development of a plan which will assure that educational opportunities for North Carolina children are dependent not upon the wealth of their local school districts, but upon the total wealth of the state.

Parsons (1977) has presented a popular fable of two cousins who attended different high schools with quite different opportunities for students. Even the basic subjects were taught in contrasting ways. One cousin simply could not believe the other's descriptions of band uniforms, tutors, calculators, libraries, activity buses, and language laboratories. Nor could he believe his cousin's description of the teachers' interest in students, the teachers' knowledge of the world, and their experience in helping students learn. Both cousins came from similar homes and had similar abilities, yet the locality where one cousin lived made a significant difference in the opportunities available to him. Parsons' fable illustrates some of the factors which have prompted attention by the state of North Carolina to school finance reform.

North Carolina which provides an average of 67 percent of the monies spent by local school districts ranks near the top of the 50 states in percentage of educational resources provided to local districts by the state.

Although North Carolina does not have the degree of disparity among school districts in per pupil expenditure as other states, within the state considerable disparity exists between the per pupil expenditure which comes from local funds. A recent study (1975) indicated that the school district providing the highest total per pupil expenditures spent 76 percent or $627 more per pupil than the district with the lowest total per pupil expenditure.

Unlike most states, North Carolina does not allocate state monies on the basis of a local school district's financial ability to support its schools. Most states have equalizing grants that compensate poorer districts with fewer resources per pupil. To the extent that local districts must appropriate money for the specified school program, the state has not equalized the burden.

Much of the disparity which exists among the state's school districts is attributable to differences in the ability and effort of local districts to generate educational funds at the local level. The central purpose of this study is to identify funding mechanisms which can provide students with equal educational opportunities regardless of the variations in student needs and in the financial ability of local districts to support the educational programs necessary to the provision of such equal educational opportunity.

Background of the Study

The Governor's Commission on Public School Finance was authorized to conduct a study and to prepare recommendations for a financial support program which would assure more equitable funding to provide an equal educational opportunity for each child in the state. This mandate has been executed by a Commission consisting of fourteen members. These included two senators and one representative in the 1977 General Assembly, nine citizens representing different organizations and various geographic areas of the state, and two *ex officio* members. The Commission conducted its study from June, 1977, to August, 1978, through its discussions and its use of expert opinions, position papers, public hearings, opinionnaires, and study committees. The study was supported financially through a non-matching federal grant administered through the North Carolina State Board of Education.

Spokesmen from the state agencies, experts in the field of school finance, and representative citizens have contributed to the development of the study. So have many other taxpaying citizens, by responding to surveys, appearing at public hearings, and serving on study committees of the Commission.

Since 1975 three surveys of citizen opinions (DeVries, 1975; State Goals and Policy Board Survey, 1977; Governor's Commission on Public School

Finance,1978) reported responses relative to the financing of the North Carolina public school system. The findings from the surveys support five major points. One, voters think they should have a share in making decisions about school finance. Two, the General Assembly should be responsible for providing the major financial support to the schools through state funds with some assistance from local and federal funds. Three, a major solution to many of the problems within education could be found with funding. Four, taxes should be more equitable. Five, state funds should make up the difference between local fiscal capacity and the costs of a quality educational program.

Four Basic Questions

Four basic questions have been addressed by the Governor's Commission on Public School Finance in relation to equitable support for equal opportunity for children.

One question centers around the way equal opportunity is to be measured. Given the varying needs of over one million public school children, how is opportunity to be measured in equal terms? It appears that the classroom unit—that is, a trained teacher and a given number of students--represent a basic unit by which educational opportunity is provided to children. If needs vary among the students in the unit, then additional opportunities will be needed by some members of that unit. Classroom units require a financial base, and special needs of members of a classroom unit require additional financial support in order to approach equal opportunity for those members.

If the classroom unit is accepted as a base in which educational opportunity is provided to children, how are these classroom units comparable? Fifty thousand classroom units are required for the state of North Carolina to provide educational opportunity. The characteristics of these units, defined by average daily membership of students, vary as to ages of students, needs of students, various curricula to be taught, and location of units. In order to provide equal opportunity, certain units need more resources than others. Examples of these special needs would be specialized apparatus for a class of deaf children, more transportation funds for a rural high school, or expensive instruments for a performing music class.

A third question of interest is the means by which the classroom units are to be supported. Classroom units are housed typically in a school and schools are grouped into school districts. Members of local school communities are involved in voting for school measures, in choosing school board members, and in participating in public issues about school affairs. Most importantly, members of communities expect the public schools to provide educational opportunities for all of the children in their communities for at least 13 years of each child's life. In large measure the schools of a community reflect the expectations of the citizens who live there. However, funds available to children according to school district vary as much as $627 per child in North Carolina. Counties with less resources may make superior efforts to finance school programs because of unequal wealth, yet the actual program results of such effort may be inferior to wealthier communities where school support does not require as much effort.

A fourth question is that of the state's financial participation in assisting local districts to provide equitable support so that educational opportunity can be equalized across the 145 school districts.

These quantitative and comparative questions relate to the ways and means through which educational opportunity is to be assured by an equitable finance plan. The questions are formulated on the assumptions previously presented, that equality of educational opportunity is a child's birthright and that the costs for providing the equal opportunity should be equitably distributed. These assumptions and processes may be traced to the earliest records of education in the state of North Carolina (Noble, 1933).

The First 63 Years of Statehood

Educational opportunity was offered in a classroom unit first in 1745 in Eden and later in 1766 in New Bern (Noble, 1933). The "school house" and the "public school" were provided along with other public necessities such as the bridge and the brig "in such a place as convenient for the town inhabitants." The school house of 1745 and the public school of 1766 were provided by members of the town (the local government).

These early local governments, in setting up the public classroom units (or schools), provided funds to pay "for poorer childrens' tuitions" and for the schoolmaster's salary. In these actions the officials recognized different needs of children (the less fortunate financially) and provided different rates for different schoolmasters. Early records show concern for "equal opportunity" for children and variance in costs of instruction (the schoolmaster's salary). Early public schools in New Bern were supported locally in three ways: a tax on "imported rums and spirituous liquors" and aid through gifts of public land and annual public taxes. The earliest records show multiple sources of support for local schools.

With the advent of statehood, the legislature of North Carolina acted to assure more equal educational opportunity for children of the state. In 1825 the state legislature enacted "The Literary Fund Law" which authorized the state to provide monies to educate "such children" as the legislature deemed it "expedient" to educate. The directors of the Literary Fund were the governor, the chief justice, the speaker of the house, the speaker of the senate, and the state treasurer. The monies for the Fund were derived from taxes on liquors and auctioneers, entries of vacant lands, and state money derived from stock dividends.

In 1839 systematic support of educational opportunity was authorized with the passage of the Cherry Bill. A local tax of $20 was matched by the state with a sum of $40 from the State Literary Fund.

Thus, within its first 63 years of statehood, North Carolina had:

1. Defined the classroom unit as the basic design through which educational opportunity would be offered to children.
2. Identified and implemented the concept that differences in children's educational needs require differences in funding in order to provide equal educational opportunity.
3. Supported education through local taxes on products and aid from land gifts.
4. Supplemented local school taxes through a formula which allowed for variance in the total amount of state funds provided per district.

The Next 100 Years of Support and Extension of Public Education

In 1889, fifty years after the passage of the Cherry Bill which allowed local school taxes to be matched 200 percent by state funds, the legislature authorized the first statewide appropriations for public education. These funds were allocated to school districts on the basis of school population.

In 1901 the legislature appropriated $100,000 to support a four-month school term in every school district in an attempt to more nearly equalize educational opportunities for children in the state. In 1911 a minimum school term of six months was mandated by amending the State Constitution, and in 1919 funding for such a term was guaranteed by the allocation of state property taxes to every school district. At the same time, the basis for the support of high schools was made similar to the support for elementary schools.

During the Great Depression (1933) the School Machinery Act was passed. The principal effect of the Act was the complete state support of the major operational costs of the public schools. A State School Commission was created to administer the state public school system, and a general state sales tax was enacted to help finance this system.

Fifty Years of School Finance Studies

Between 1927 and 1968 four statewide North Carolina school finance studies were conducted and reported to the governor and the General Assembly (1927, 1948, 1957, 1968).

The State Educational Commission of 1927, appointed by Governor Angus McLean, noted that the amount of state support for school districts should be sufficient to make the burden on each county substantially uniform.

The State Education Commission of 1948, authorized by the General Assembly and appointed by Governor Gregg Cherry, did not come to a clear consensus on its recommendations. However, its report, *Education in North Carolina Today and Tomorrow*, carried a clear recommendation for an adequate minimum foundation program and for equalized tax effort at both state and local levels to support that program.

A 1957 Committee for the Study of Public Schools was authorized by the General Assembly to study current school financing and the degree of equity resulting from these procedures. The Committee recommended the continuation of the present school support plan with the addition of an incentive system for local supplementary support.

During the administration of Governor Dan Moore, a Governor's Commission reported in 1968 on the public school system of North Carolina. One section of the report, *A Child Well Taught*, made recommendations about school finance. The major recommendation was that the state adopt a minimum basic program funded by local, state, and federal monies. A recommendation also was made for an incentive support program to reward counties that exceed the mandated local share of the minimum program.

In addition to the statewide studies, other relevant studies were conducted. A 1972 study committee, appointed by the chairman of the State Board of Education, was charged with the investigation of the manner in which state funds were allocated. No recommendations were made regarding any equity considerations. During that same year a report developed by the Institute of Government of North Carolina treated the subject of state financing of public education and alternative models for such financing. In 1975 the Office of State Planning published the results of a study to determine the extent to which funds were equitably distributed to local school districts. The Division of School Planning of the State Department of Public Instruction conducted a study in 1976 and recommended that the state assume a greater share of school costs and also realign or consolidate administrative units.

Although conditions have varied across the time during which the studies have been conducted, three conclusions have been expressed consistently. A minimum foundation or base program is needed in order to provide equal opportunity for children in the state. Tax efforts should be equalized in some manner so that taxes are equitably distributed. School districts should be allowed to exceed the minimum foundation or base program for their districts.

References

Bloom, R. and Rudolph, S. *School Finance in North Carolina: 1975*. Raleigh, North Carolina: North Carolina Office of State Planning, 1975.

Campbell, W. A. and others. *Report on North Carolina School Finance: Response to Serrano-Rodriquez*. Chapel Hill, North Carolina: Institute of Government, 1972.

DeVries, W. *North Carolina Survey*. Raleigh, North Carolina: N.C. Opinion Research, August, 1975.

Division of Management Information Systems. *The Status of Equal Educational Opportunity in the Public Schools of North Carolina: A Search for a More Equitable Plan*. Raleigh, North Carolina: Controller's Office of the Department of Public Education, 1975.

Division of School Planning. *A Resource for Planning and Decision-Making*. Raleigh, North Carolina: North Carolina Department of Public Instruction, 1976.

Governor's Commission on Public School Finance in North Carolina. Minutes of Meeting, March 7, 1978. New Bern, North Carolina.

Governor's Commission on Public School Finance. "North Carolina Public School Finance Study Opinionnaire Results," Raleigh, North Carolina: The Commission, 1978.

Governor's Study Commission on the Public School System of North Carolina. *The Report of the Governor's Study Commission on the Public School System of North Carolina*. "A Child Well Taught!" Raleigh, North Carolina: The Commission, 1968.

Hunt, James B., Jr. "Public Schools and the Community: Strengthening Quality Education in the 1970s." A Position Statement by Jim Hunt, Candidate for Governor, July 10, 1976, Raleigh, North Carolina.

Hunt, Governor James B., Jr. "Twelve Appointed to Public School Finance Commission," Press Release from the Governor's Office, June 3, 1977, Raleigh, North Carolina.

Johns, R. L., Alexander, K., and Jordan, K. F. *Financing Education: Fiscal and Legal Alternatives*. Columbus, Ohio: Merrill, 1972.

Noble, M. C. S. *A History of the Public Schools of North Carolina*. Chapel Hill, North Carolina: University of North Carolina Press, 1933.

North Carolina Committee for the Study of Public School Finance. *Report of the North Carolina Committee for the Study of Public School Finance*. Raleigh, North Carolina: The Committee, 1958.

North Carolina State Board of Education. "A Proposal to Develop a State Financial Assistance Plan for Elementary and Secondary Education in North Carolina." Raleigh, North Carolina: The State Board of Education, 1977. (Xeroxed).

Parsons, C. "School Finance Reform." *Christian Science Monitor* (Eastern Edition), November 7, 1977.

School Finance Study Committee of the North Carolina State Board of Education. *Report of the School Finance Study Committee of the North Carolina State Board of Education*. Raleigh, North Carolina: The State Board of Education, 1972.

Serrano v. Priest (1971). 96 Cal. 601 (Cal. 1977).

State Education Commission. *Education in North Carolina Today and Tomorrow*. Raleigh, North Carolina: The United Forces for Education, 1948.

State Educational Commission. *Report of the State Educational Commission on the Public School System of North Carolina, The Financial Condition of Counties, Part IV*. Raleigh, North Carolina: The Commission, 1927.

State Goals and Planning Board. *An Analysis of Findings From the North Carolina Tomorrow Survey and the Comparison Scientific Survey*. Research Triangle Park, North Carolina: The Research Triangle Institute, 1977.

State of North Carolina. *Constitution* of 1776, Article XLI.

Chapter 2

Selected Characteristics Of North Carolina

The objective of this section is to compare certain aspects of the public school system of North Carolina to the systems of other states, particularly those within the same geographical region. Comparisons are presented under four headings: the educational system and demographic characteristics, the underlying social and economic characteristics that differentiate the states, the fiscal support system for public school instruction, and measures of educational achievement and impact. Intrastate comparisons are introduced within the socioeconomic characteristics where such data are appropriate.

Educational Systems and Demographic Characteristics

Average daily membership in the North Carolina school system in 1977 was 1,164,023. This can be compared with a total school membership in the United States of 43,634,577 with North Carolina ranking ninth among all states (University of North Carolina, Institute for Research in Social Science, 1978). Only two states in the region, Texas and Florida, have larger school systems by membership. Two others, Virginia and Georgia, have school systems which are comparable in size and exceed one million pupils.

To administer the North Carolina school system, the state and local governments in 1976 jointly employed 52,906 classroom teachers out of the nation's 2,193,000 and 4,658 nonprofessional support, office, and clerical staff out of the nation's 218,000. North Carolina ranked twelfth in numbers of classroom teachers and fifteenth in numbers of support personnel (National Center for Education Statistics, 1977).

The ease with which financial support can be found for the school system is a function in part of the ratio between the school age population and the total population. The school age population for North Carolina in 1976, at 23.2 percent as a percentage of total population, falls near the middle among the states of the region and, like Virginia, exactly matches the national percentage. Six southern states have greater percentages—Alabama, Georgia, South Carolina, and Texas, with Louisiana and Mississippi having the higher percentages, 25.8 and 25.6. Three southern states have smaller proportions of school age—Arkansas, Florida, and Tennessee; the lowest percentage is found in Florida where 20.6 percent of the population falls in the school age category (University of North Carolina, Institute for Research in Social Science, 1978).

Other characteristics of the age distribution of the population may be relevant to the state's capacity to support its school system. Population not of school age may be preschool, in the productive work force, or past retirement age. The ratio between those in the productive working force age and those both younger and older is sometimes referred to as the dependency ratio.

In closer examination, North Carolina appears as intermediate within the region, including some border states, in the proportion of its total population in the preschool and school age category. Alabama, Delaware, Georgia, Maryland, Mississippi, South Carolina, Texas, Virginia, and West Virginia show higher proportions; Arkansas, Florida, Kentucky, Louisiana, Oklahoma, and Tennessee show lower proportions (although Louisiana undoubtedly falls in the group because of its coupling with Arkansas and Oklahoma). The proportion of the population under five years—a measure of immediate prospective demand on the school system—shows a somewhat similar pattern, although several states change rank and North Carolina assumes a somewhat lower rank. Alabama, Georgia, Mississippi, and South Carolina show percentages in the under-five category that are higher than North Carolina's 7.4 percent; Florida, Tennessee, and Virginia each have smaller population proportions five years and under.

A different picture emerges if account is taken of the population 65 years of age and over when these, like those in school or younger, are counted

as outside the productive working force. By this definition of dependency, North Carolina fares better because its population, compared with the remainder of the region, is relatively youthful. Florida, with 16.1 percent, shows the highest proportion 65 and over, but the states of Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Oklahoma, Tennessee, and Texas all have percentages higher than North Carolina's 8.8 percent. Georgia and South Carolina have slightly lower proportions of elderly, and Virginia falls within a group of states with 8.1 percent of those 65 and over.

Combining the figures for those less than 18 years of age and those 65 and over provides one measure of a dependent population, albeit a measure now under challenge as retirement policies change. Its complement is the proportion of the population from 18 to 64. In North Carolina this complement, the "productive population," constitutes 60.4 percent of the total, a strong manifestation of the good health of the state's social structure. Within the region only the grouping of states that includes Delaware, Maryland, Virginia, and West Virginia matches this advantageous situation and no other state or group of states surpasses it. By this standard Florida, at 56.2 percent, is in the least favorable position, while Kentucky and Tennessee with 58.9 percent are in the best position. The remaining states are clustered tightly within a range of less than a percentage point from 57.2 percent in Texas to 58 percent in Georgia and South Carolina.

Social and Economic Characteristics

The school system of North Carolina is embedded within the state's social structure; its fiscal system is embedded within the economy of the state. The socioeconomic characteristics of the state, even when they appear obvious, must be kept in mind as the background against which the educational effort takes place.

Selected Social Characteristics

The first of these characteristics is the complement to the size of the school membership: the size of the population of the state. North Carolina, with an estimated population of 5,469,000 in July, 1976, was the third largest state in the South, the eleventh largest in the nation, and contained 2.55 percent of the U.S. population (Brunson and Bever, 1977).

A surprising feature accompanied this population size; the two larger southern states, Florida and Texas, were both highly urbanized. Census estimates for 1975 showed both states above the national norm in the percentage of population living in metropolitan areas. Against the national proportion of 72.8 percent in metropolitan areas, Florida had 83.7 percent and Texas 78.5 percent. In North Carolina, on the other hand, less than half the population was found within the boundaries of metropolitan areas. At 45.3 percent North Carolina was, by this measure, the third most rural state in the South. Only Arkansas and Mississippi were less metropolitan in population (Brunson and Bever, 1977; U.S. Fact Book, 1978).

The combination of population size plus rural residence may seem paradoxical; its logical accompaniment is a high density of population spread over a wide area. This is precisely what North Carolina possesses. Despite its relative lack of metropolitan centers North Carolina shows a ratio of population to square miles of land area almost twice that of the nation as a whole, 112 to 61, and this is the third most densely settled state in the region. Only Florida and Virginia rank higher (U.S. Fact Book, 1978). Texas, despite its population concentration in metropolitan areas, appears second from the bottom when its large population is distributed over its larger open spaces. All three characteristics are clearly relevant to the definition of educational needs in North Carolina. The population of the state is, relatively, large for the South, a state in which the majority of the population still lives outside metropolitan areas, and a state in which those nonmetropolitan areas are densely settled.

Selected Economic Characteristics

Identification of the fiscal situation of the school system requires consideration, however, of the state's economic standing. Three measures of economic well-being are presented (University of North Carolina, Institute for Research in Social Science, 1978).

The first measure concerns per capita income as a measure of wealth. The figures reported in most recent state-by-state comparisons show North Carolina to be in the middle of the southern states; Florida, Georgia, Texas, and Virginia report higher per capita incomes. Georgia is, however, at $5,548 very near to North Carolina's $5,453. Louisiana at $5,405 is close behind, followed by Tennessee, South Carolina, Alabama, Arkansas, and Mississippi, respectively. All the southern states without exception appear as poorer than the national norm of $6,393. North Carolina is 85 percent of the national average; Virginia's $6,341 is 99 percent of the national average; and Mississippi, at $4,529, is 71 percent.

A more sensitive measure than per capita income is the proportion of families with incomes below poverty level. Two principal elements help to explain the differences between percentage of families below poverty level and per capita income. One concerns the distribution of income. Two states may present identical averages even if the population of one state clusters closely around the state average, while in the second state the very rich balance off the very poor. In the latter situation, however, more individuals will possess incomes below poverty level. The second element of difference is the transformation of the unit of measurement from the individual to the family. A state will appear comparatively advantaged if its families are larger, interdependent in income support, and able to help one another across the poverty line.

Whichever the explanation, North Carolina improves its showing somewhat by this latter standard, with 12.1 percent of families with incomes below poverty level as of 1975. Texas and Florida, at 11.7 and 11 percent, the two largest (and wealthiest) of the southern states appear in a better position, plus Virginia, at 8.3 percent with a substantial proportion of its population in the suburban ring of the Washington, D.C., metropolitan area. The remaining southern states have higher proportions, Mississippi ranking highest with 20.4 percent of families below the poverty level. Once again, however, the South as a region appears at a disadvantage with the nation. Only Virginia among the southern states falls below the national average of 9 percent of families in poverty.

The third measure of economic well-being concerns unemployment. In terms of percentage of the working force unemployed in 1976, the southern region appears in better circumstances than the remainder of the country. Although unemployment reports fluctuate widely both in total and incidence, in 1976 only two southern states—Florida and Georgia, at 9 and 8.1 percent—showed unemployment rates higher than the national rate of 7.7 percent. North Carolina, with 6.2 percent unemployment rate, was substantially below the national average. In fact, only three southern states—Tennessee at 6 percent, Virginia at 5.9 percent, and Texas at 5.7 percent—ranked lower by this criterion (Brunson and Bever, 1977).

The last category of variables to be noted are those reflecting change in the economic situation of North Carolina and the other southern states. Attention has been called to the relatively lower economic standing of the southern states, including North Carolina, in comparison with the nation; however, these differences are narrowing. In measuring the proportionate growth in personal income from 1970, no southern state falls below the national growth rate of 55.6 percent. In every southern state, annual personal income from 1970 to 1975 increases more rapidly than the national average, a clear demonstration of the region's recent economic vitality (Brunson and Bever, 1977).

North Carolina, of course, shares in this pattern of regional economic growth. Its percentage change in total annual personal income of 62.7 percent is significantly above the national norm. By the stan-

dards of its own region, however, the state has not fared as well. Personal income grew less rapidly in Georgia during this time period, 61.9 percent. In all other southern states income growth was more rapid than in North Carolina with a maximum value of 84 percent in Florida.

Population Growth

Concomitant with economic growth has been growth in population. North Carolina has shared in a national migration of population from the Northeast and Midwest toward the South and West. In this population shift the South has not only retained a greater proportion of its normal population growth, the excess of births over deaths, but has also been the recipient of a net interregional migration, an excess of immigrants from other regions over emigrants from the South to other regions.

Similar to the other southern states except Louisiana and Mississippi, the state recorded a net in-migration from 1970 to 1976. Estimated at 124,000 over the six years, this total was the fourth largest in the South. Since North Carolina's population was large in 1970, the growth is less impressive by percentage. The net in-migration of 2.4 percent was seventh highest in the South.

The combined effects of normal population growth, retention of a state's own population, and net migration percentage of total population gain from 1970 to 1976 represents another measure of relevance. Again, North Carolina's percentage growth, 7.6 percent, ranks seventh in the South. Florida ranks first with a phenomenal 24 percent population growth in the six-year period. Texas, South Carolina, Arkansas, Georgia, and Virginia follow in order, all preceding North Carolina. Tennessee, Alabama, and Mississippi show somewhat lower population growth rates, yet exceed the national increase of 5.6 percent. In the South only Louisiana, at 5.4 percent, lags behind national population growth from 1970 to 1976.

The pattern of population growth by type of area is also significant since growth in the South has taken place in both metropolitan and nonmetropolitan regions varying in relative proportion from state to state. These patterns, which are most useful when examined on a county basis, are presented in the following section for the state of North Carolina.

Migration and Population Growth: Intrastate

A series of three maps will be used for intrastate comparisons. The first, Figure 2-1, presents the distribution of the major element in normal population growth, the birth rate. Since the rate is presented as the ratio between live births in 1976 to each one thousand of population, it may be depressed by either of two factors: (a) the relative proportion of the county's population consisting of women in the "nonrisk" ages of pregnancy, and/or (b) the knowledge of and use of contraceptives (University of North Carolina, Institute for Research in Social Sciences, 1978).

With the exception of a small cluster of counties in the northeast, the eastern portion of the state, particularly the Coastal Plain, shows much higher birth rates in proportion to population. The Piedmont, generally, and its urban counties, in particular, appear as intermediate in birth rates with the Mountain counties of the far west appearing in the lowest category by rate.

Figure 2-2 portrays another factor in county population growth and provides a quite different picture. The map reports net migration by county for 1970 to 1976, defined as the residual difference left after natural increase has been subtracted from the estimated 1976 population, then a percentage computed on the base of the 1970 population. In any county it can be expected that in addition to births and deaths, some people have moved in and some have moved out. The map displays the net growth or loss when these movements are cancelled against one another (University of North Carolina, Institute for Research in Social Science, 1978).

Aggregate data for the state as a whole from 1970 to 1976 show growth occurring in both metropolitan areas and nonmetropolitan areas, but with

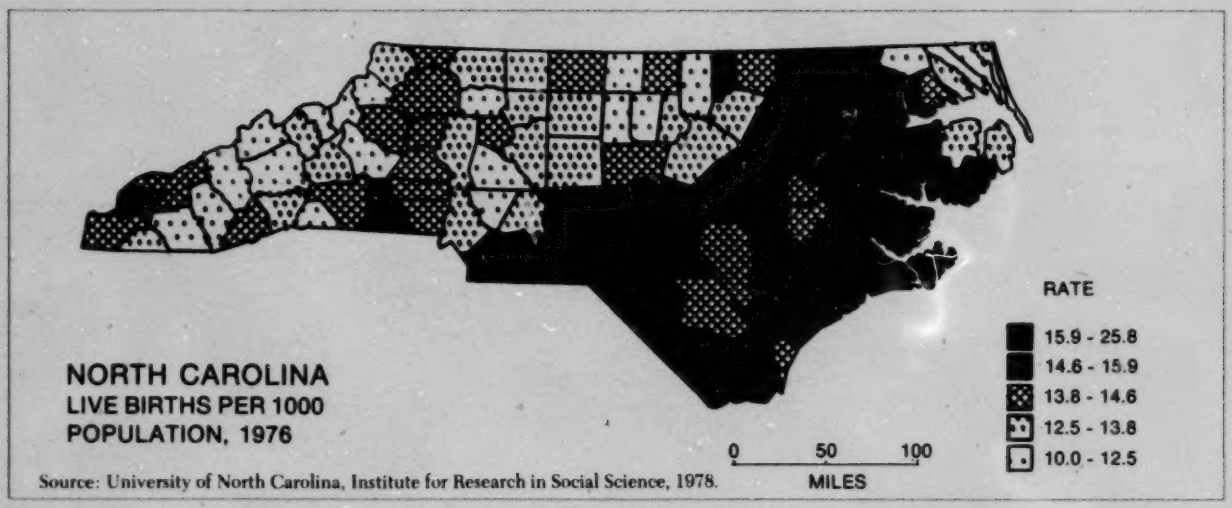


Figure 2-1

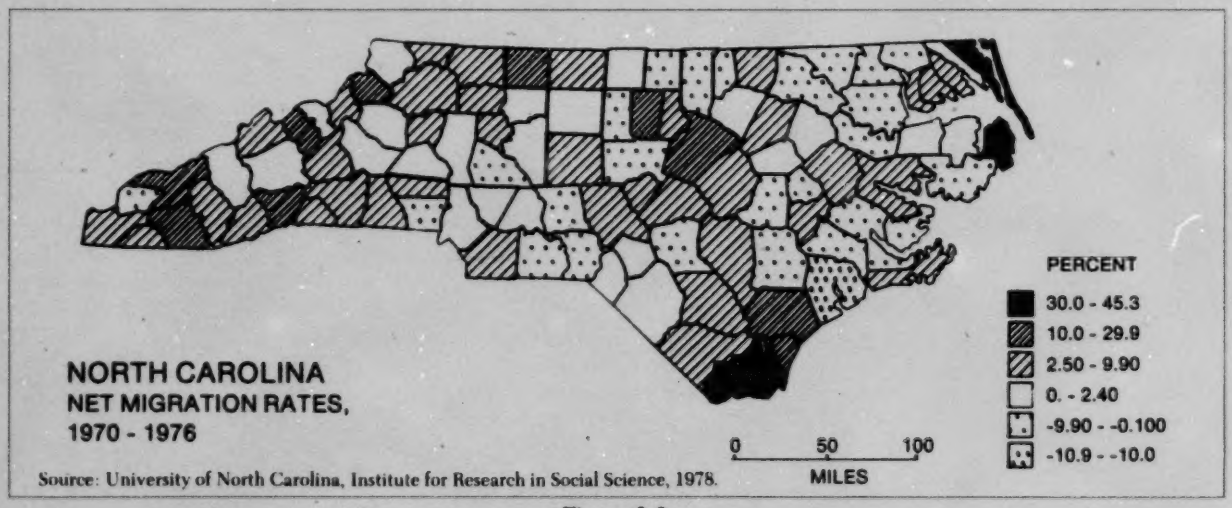


Figure 2-2

somewhat greater population increase in the former, 8.1 percent as compared to 6.5 percent in the nonmetropolitan areas. The general pattern, however, was one of dispersed growth in population. This balance was reflected in the fact that of the 20 fastest-growing metropolitan areas in the South as measured by rate of growth, 1970 to 1975, only one—Wilmington—was in North Carolina. At a 19.6 percent growth rate, Wilmington ranked nineteenth. (Of the top 20 metropolitan areas by rate of growth, ten were in Florida and five in Texas.)

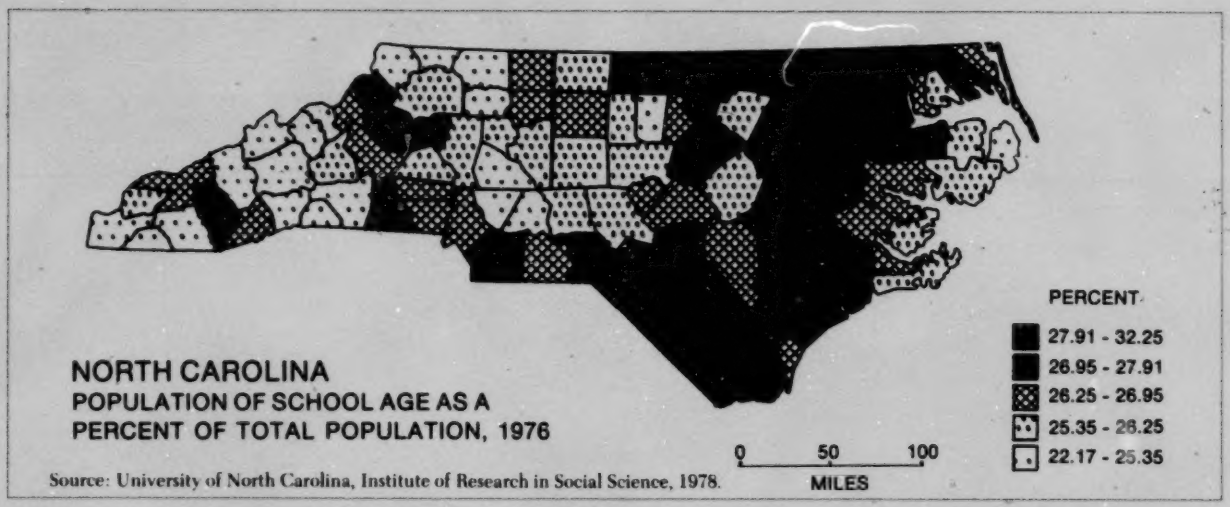


Figure 2-3

According to Figure 2-2 the larger increases in population resulting from in-migration are occurring along the coast, particularly in the northeastern and southeastern corners of the state. (The latter is, of course, the Wilmington metropolitan area already cited as among the South's fastest-growing areas.) Elsewhere in the eastern part of the state, despite the increase in population resulting from high birth rates noted previously, the effects of net migration are less pronounced and a number of counties continue to show net losses. Some urban counties in the Piedmont, such as Wake and Durham, show measurable population gain through in-migration. A pronounced difference, shown in Figure 2-2, is found in some of the mountainous counties of the west where birth rates are low, but substantial in-migration is taking place (University of North Carolina, Institute for Research in Social Science, 1978).

County estimates for the school age population as a percentage of total population are presented in Figure 2-3 (University of North Carolina, Institute for Research in Social Science, 1978). Once again, the regional pattern is very clear. If the school age population is seen as a "burden" on the productive part of the total population, the load is more burdensome in some counties than in others. The combination of high birth rates plus out-migration, particularly of adults, produces especially high concentrations of school age population in rural, eastern North Carolina. However, the pattern is not found exclusively in rural and small-city eastern counties. Wake, among the state's largest counties, also falls in the highest percentage category for school age population as a proportion of the whole; a scatter of counties in the west appears in the second category; and such urban counties as Mecklenburg, Forsyth, Guilford, and Durham are in the intermediate group.

The maps presented show factors influencing population distributions and "dependency ratios" in the individual counties. High birth rates are likely to increase the share of the county school age population. Since out-migration is more likely to be of adults, substantial out-migration is likely to increase the dependency rate further. Substantial in-migration varies in its effects, depending on whether the in-migration is of adults seeking job opportunities, families with school age children, or older Americans moving to retirement com-

munities. A third map, Figure 2-3, presents one measure of the effects of these population movements upon the social and economic environment that surrounds the school system.

The maps have been interpreted primarily in regional terms and evidences of regional difference are highly visible. More detailed inspection of these will show, however, numerous differences in patterning among counties within the same region, and these differences must be taken into account. Even when general trends are evident, each county represents a highly individual configuration of population and needs.

Fiscal Support for the Public School System

The previous discussion has implied a close relationship between the population of a state and its economy on the one hand and its educational needs and fiscal capacity on the other. Once more, certain unique characteristics of North Carolina become more visible through comparison.

First, it must be noted that North Carolina relies heavily on state government-collected tax revenues to support governmental activities within the state. In North Carolina nearly three-quarters (71.4 percent) of the total of state and local taxes were collected by state government (Bureau of the U.S. Census, 1978). In this respect, North Carolina is much like one group of southern states that includes Alabama, Arkansas, Louisiana, Mississippi, and South Carolina. These states are all heavily dependent upon state tax revenues, but are somewhat unlike a second group of southern states—Georgia, Tennessee, Texas, and Virginia—that depend more heavily on local tax efforts. Without exception, southern states are more reliant on state tax effort than the national norm of 56.9 percent, suggesting that outside the South the typical state distributes the tax burden more equally between state and local governments.

This pattern extends to education. Most states that depend more heavily on state tax revenues for governmental functions do the same for public school education. North Carolina, however, is notable for its particularly heavy dependence on state tax revenues to support education and takes first place among the states of the South with 67 percent of revenues derived from the state. Virginia, with a quite limited state contribution to public school instruction of 28.8 percent of all revenues, is the only southern state to fall below the national average of 43.3 percent (National Education Association, 1977). Therefore, the Commission recommends:

> That the state of North Carolina adhere to and strengthen its provision of a high level of basic school support from taxes collected at the state level.
>
> That the state of North Carolina maintain its fiscal effort for financing the public school system of the state.

In comparing the percentages of revenue for public schools derived from the federal government in 1976-77 for the southern states, North Carolina appears exactly in the middle with 14.6 percent. In descending order, Mississippi, Louisiana, Arkansas, Alabama, and South Carolina receive larger shares; Tennessee, Georgia, Texas, Virginia, and Florida receive less. All eleven states, however, pay more of their school bills with federal funds than is true for the nation as a whole (National Education Association, 1977).

North Carolina's 19.4 percent of educational revenues from local sources is the lowest in the South, although Alabama and Mississippi are close behind at 21.3 and 23.6 percent, respectively. Arkansas, Georgia, and South Carolina show somewhat larger local contributions, though in no case does it exceed one-third of total revenue. Florida, Tennessee, and Texas form another group with slightly heavier dependence on local funds. Only in Virginia, however, does the local contribution, 61 percent, exceed one-half of total public

school support (University of North Carolina, Institute for Research in Social Science, 1978).

The composite impact of these influences on spending can be measured by comparing the estimated expenditure per pupil in average daily membership in 1976-77 for the United States, North Carolina, and the other southern states. Below the national average of $1,476, North Carolina at $1,137 per pupil is also below three southern states—Florida, Virginia, and Louisiana—and is almost equal with South Carolina. North Carolina, in fact, ranks 38th among all states in per pupil expenditure for 1976-77 (National Center for Education Statistics, 1977).

Evaluation of Impact and Achievement

Findings suggest that high school completion is not only a desirable goal in itself, but is also instrumental in increasing the economic productivity of the individual. From the social viewpoint, by increasing the productivity of individuals, the rate of high school completions increases the productivity of the economy and the income level of the society.

High school completion and income level are closely associated. Persons who have completed high school have higher incomes. The nature of the association is more difficult to quantify. This controversy was an element in a debate between Potthoff (1975) and Malizia (1977) over the most appropriate explanation for the low earnings rate in manufacturing employment in North Carolina. Potthoff concluded that educational level was the major explanatory factor and estimated that 5.9 percent additional earnings was associated with each additional year of schooling. Malizia, on the other hand, while describing the relationship between education and earnings as "very strong," dismissed it as ambiguous in meaning.

At respective age levels, those who have completed high school appear to receive higher incomes. Particularly noteworthy is the differential effect of high school education through time. Step by step, the proportion of high school graduates with incomes of $5,000 or more appears to grow. By age 55 to 65, the income difference between those who have completed high school and those who have not is very obvious (University of North Carolina, Institute for Research in Social Science, 1978).

Beyond question, therefore, education level and earnings are highly interrelated. The confusion arises as to the casual connection between them. One possibility is that a high school education enhances skill and thereby increases earning capacity. The other possibility is that the high school diploma is a credential which, without any necessary addition to skill, is essential for admission to the higher paying jobs.

While not decisive in resolving this conflict, a measure of productivity may be the relationship between manufacturing and education. If the two factors were closely related—that is, productivity followed from high school completion—a high correlation would be expected between the two variables. States in which relatively few production workers have completed high school would be expected to show low productivity; states with many high school workers in manufacturing employment would be expected to show high productivity. North Carolina fits the assumption. It has a relatively low proportion of manufacturing workers who have completed high school; it has relatively low productivity as measured by value added by manufacture divided by the number of production workers. Other states fit the pattern also. The Pearson coefficient of correlation between the two variables is .47 suggesting that about 22 percent of the state variation in manufacturing productivity is associated with state variations in high school completion by manufacturing employees. Quite obviously, other factors are also at work. Perhaps the most important of these is the mix of manufacturing employment within the individual state since particular industries vary widely in their productivity ratios (University of North Carolina, Institute for Research in Social Science, 1978).

Even in this abbreviated form, the data lead toward the conclusion that high school education makes some independent contribution to worker productivity. If true, the argument suggests that North Carolina's fiftieth rank in average weekly earnings in manufacturing employment owes something to its low rank in high school completions.

Conclusions

The purpose of this chapter has been to describe the principal characteristics of the North Carolina educational system through comparison with other states.

The major conclusions from the interstate and intrastate comparisons are summarized as follows.

1. North Carolina's school system, measured by average daily membership (ADM), is one of the largest in the South.
2. Per capita income in North Carolina, which provides the base for both taxation and school expenditure, is intermediate among the southern states.
3. North Carolina's fiscal system is distinctive in its heavy reliance upon state revenues to support elementary and secondary education.
4. North Carolina is modestly high, fourth in the South, in expenditure per pupil in ADM.
5. Measured by the proportion of the population completing high school, North Carolina does not compare favorably with other states; additionally, the number of high school graduates is increasing more slowly than elsewhere in the South.

References

Brunson, E.E. and Bever, T.D. *Southern Growth Trends, 1970-76*. Research Triangle Park, N.C.: Southern Growth Policies Board, 1977.

Malizia, E. *Earnings of North Carolinians*. Chapel Hill, N.C.: Department of City and Regional Planning, University of North Carolina, 1975.

National Center for Education Statistics. *Statistics of Public Elementary and Secondary Day Schools*. Washington, D.C.: U.S. Department of Health, Education, and Welfare, 1977.

National Education Association. *Estimates of School Statistics, 1976-77*. Washington, D.C.: The Association, 1977.

Potthoff, R.E. *A Study of the Determinants of Geographical Earnings Differentials*. Burlington, N.C.: Burlington Industries, 1977. (Unpublished manuscript).

U.S. Bureau of Census. *State Government Tax Collections in 1977*. Washington, D.C.: U.S. Government Printing Office, 1978.

University of North Carolina. Institute for Research in Social Science. *Interstate Comparisons*. Chapel Hill, N.C.: The Institute, F. Munger, Director, 1978. (Unpublished manuscript).

U.S. Fact Book. *The American Almanac for 1978*. The Statistical Abstract of the U.S. New York: Grosset Dunlap, 1978.

Chapter 3

Status of Education: Teachers and Programs

Equity of education is largely measurable by the quality of the teaching force and the uniformity of educational offerings throughout a state. While the most desirable characteristics of a good teacher may be widely variant, the importance of well-trained and experienced teachers is commonly accepted. The programs and courses through which teachers deliver their educational services are also an indicator of the depth and scope of educational opportunity. This chapter examines educational opportunity in the light of these measures and identifies present patterns among districts and regions of the state. Section I presents information about the status of teachers, and Section II presents the status of various educational programs.

Section I — Status of Teachers

Teachers in any school system are the vital links between the students and organized educational experiences. Educational personnel are employed to bring together a variety of skills that will enhance a child's educational opportunities.

Since education is a labor intensive industry, the fiscal aspect of the employment of personnel is central to any analysis of the school finance system, particularly in the state of North Carolina. North Carolina has a unique financing strategy in that the state allocates positions to the local school districts and pays for the personnel employed to fill the positions according to a state-adopted salary schedule. The local administrative unit has the authority to employ additional personnel and pay them from local funds and to supplement from local funds the salaries of all personnel. This fiscal strategy was adopted to allow the local units to employ the most qualified personnel and meant that all local units have access to state-paid personnel for the bulk of their teaching force. The provision for locally employed and paid personnel and salary supplements provided from local funds, however, would appear to introduce a wealth-related inequity. It would appear that local units with greater local resources (property valuation or personal income) would be in a favored position to provide additional educational personnel and to increase salary levels. Less wealthy districts or districts where no supplemental levy is used for school purposes would appear to be at a competitive disadvantage in the employment of teachers.

This section provides an analysis of the fiscal aspects of the teaching force. Specifically, three major issues are presented. First, a comparison is made of teacher and administrator salaries and fringe benefits in North Carolina and contiguous states. Next, the factors influencing the employment of teachers are examined. The relationship of salaries and pupil/teacher ratios to the fiscal ability and tax effort of the local administrative units is the focus of the third issue.

Salaries and Fringe Benefits

Salaries

Expenditures for all salaries and related expenses (e.g., social security, retirement, and insurance) accounted for more than 80 percent of the total current expenditures for public schools in North Carolina during 1976-77. This figure is typical for the public schools of the United States. The costs of instructional salaries alone account for approximately 60 percent of current expenditures on the national average. North Carolina expended an estimated 58.8 percent of current expenditures for instructional salaries during the 1976-77 school year. This amounted to an estimated expense of just over $780 million for instructional salaries and does not include such costly items as social security, retirement, and insurance.

The purpose of this section is to analyze and contrast the economic status of North Carolina in-

Table 3-1

Average Annual Salaries of Instructional Staff in Public Schools for Selected States 1976-77

State	National Rank	Regional Rank	Average Annual Salaries of Instructional Staff	Salaries as Percent of Average	
				Region	Nation
North Carolina	29	2	$12,337	105	89
South Carolina	43	6	10,936	93	79
Tennessee	39	5	11,277	96	82
Kentucky	35	4	11,648	99	84
Virginia	27	1	12,440	106	90
Georgia	32	3	11,945	102	86
Regional Average			11,764	100	—
National Average			13,830	—	100

Source: *Ranking of the States, 1977* by the National Education Association, 1977, p. 18.

structional personnel and administrators with their counterparts in contiguous states and in the nation. Salaries, fringe benefits, and retirement are the primary categories for analysis. In addition, a discussion of the cost of living, tax burdens, fiscal capacity, and tax effort is presented.

The average instructional salaries for the six contiguous states ranged from a low of $10,936 in South Carolina to a high of $12,440 in Virginia. North Carolina compared favorably to the regional states, being second to Virginia in average instructional salary. All regional states, however, were below the national average and the state ranked 29th among the 50 states (see Table 3-1). Actual teachers' salaries ranged from $10,507 in South Carolina to $13,167 in Georgia. The average salary for North Carolina teachers was $11,649 including local supplements. The information to enable adequate comparisons of principal, supervisor, assistant superintendent, and superintendent salaries was not available from all states.

Even though there have been important gains in instructional salaries during the past ten years, high levels of inflation have seriously eroded the purchasing power of the dollar. In order to determine the impact of inflation on instructional salaries, current dollars were adjusted to reflect the relative purchasing power of the dollar in 1967 (see Table 3-2). The national average instructional salary increased by 81 percent ($7,630 to $13,830) from 1968 to 1977 when measured in current dollars. When current dollars were adjusted to the 1967 purchasing power, the total increase was only 6.9 percent.

Instructional salaries increased in North Carolina by 91.5 percent in current dollars in the same period. The relative increase in salaries was 12.9 percent when current dollars were adjusted to 1967 price levels. The real gains in instructional salaries in North Carolina have exceeded increases at the national average.

A comparison of average instructional salaries indicates the relative salary levels paid by the states, but it does not indicate the degree to which a state exerts its fiscal resources for educational salaries. Fiscal effort is a measure quantifying a govern-

Table 3-6

Average Annual Salary of Instructional Staff for the Nation in Current Dollars and Current Dollars at 1967 Purchasing Power from 1966-77

Year	National Average			North Carolina	
	Current Dollars	Current Dollars at 1967 Purchasing Power	Purchasing Power of the Dollar (1967 = $1.00)	Current Dollars	Current Dollars at 1967 Purchasing Power
1966	$ 7,690	$7,335	0.980	$ 6,448	$6,165
1969	8,200	7,470	0.911	7,041	6,414
1970	8,840	7,602	0.860	7,744	6,660
1971	9,570	7,886	0.824	8,486	6,976
1972	10,103	8,070	0.799	8,845	6,668
1973	10,660	8,031	0.753	9,314	7,004
1974	11,185	7,583	0.678	9,885	6,690
1975	12,070	7,495	0.621	11,275	7,002
1976	13,094	7,686	0.587	11,561	6,786
1977	13,860	7,828	0.565	12,897	6,989
Percent Increase 1967-77	81.2	6.9		91.5	13.9

Source: U.S. Government Printing Office. *Digest of Education Statistics, 1978*. Washington, D.C.: Author, 1977, p. 74; U.S. Government Printing Office. *Handbook of Labor Statistics 1977*. Washington, D. C.: Author, 1977, p. 341.

ment's use of its fiscal capacity for public purposes. Effort measures allow for more meaningful comparisons among levels of government because they show the level of exertion that the government is making in funding a service or a component of a service. The measure of effort used in this section was derived by dividing the 1976-77 average instructional salary for each state by the state's respective 1976 per capita personal income. The larger the number obtained by this process, the greater is the state's fiscal effort for instructional salaries (see Table 3-3).

North Carolina was found to have the greatest effort in funding instructional salaries among the regional states. In fact, North Carolina's fiscal effort was almost 5 percent greater than the national average. While it may appear that North Carolina's fiscal effort was significant in the region, it should be noted that the coefficient of deviation was 3.05. Such a low coefficient of deviation indicates a high degree of uniformity of fiscal effort among the regional states.

Fringe Benefits

There is no question that the cost of employee fringe benefits including retirement plans have become an increasingly expensive portion of school system budgets. It is estimated that fringe benefits

Table 3-3

Fiscal Effort Made for Funding Instructional Salaries in North Carolina and Contiguous States 1976-77

State	Per Capita Personal Income, 1976	Average Instructional Salaries, 1976-77	Fiscal Effort	Effort as Percent of Average	
				Region	Nation
North Carolina	$5,458	$12,387	2.269	106	105
South Carolina	5,147	10,936	2.125	100	98
Kentucky	5,379	11,648	2.165	102	100
Tennessee	5,364	11,277	2.102	99	97
Virginia	6,341	12,440	1.962	92	91
Georgia	5,548	11,945	2.153	101	100
Region	5,559	11,764	2.124	100	—
United States	6,599	13,630	2.161	—	100

Source: The data in column 2 are from *Survey of Current Business*, by the U.S. Department of Commerce, U.S. Government Printing Office, August, 1977, p. 17. The data in column 3 are from *Ranking of the States*, 1977 by the National Education Association, 1977, p. 18. Copyright by the National Education Association. Reprinted by permission.

account for approximately 10.3 percent of total current expenditures in North Carolina.

North Carolina allocates monies for retirement and social security on the basis of salaries paid in each local administrative unit. Hospitalization insurance funds are allocated on the basis of $294 per year per eligible employee (State Appropriation — State Aid, 1977-78). Information was not available to indicate the degree to which the local administrative units supplement the fringe benefits of personnel.

North Carolina compared favorably with the majority of the nation, including contiguous states, in the area of fringe benefits for teachers in 1975-76. For example, North Carolina provides an unlimited accumulation for sick leave days. Insurance premiums for a single plan group hospitalization and major medical coverage are fully paid by the local administrative units. On the negative side, North Carolina does not pay any costs of group life insurance nor provide sabbatical leave.

Retirement Plans

Retirement plans constitute the core of any fringe benefit package because of the critical importance to the employee of financial support during later years. Because of the changing age characteristics of the national work force and increased benefits, retirement plans are becoming expensive for both the employee and employer.

Basically two types of state retirement systems are available to educational personnel; that is, a separate teachers' system and a public employees' system to which teachers belong. Separate retirement systems for teachers were found in 29 states with 20 of those states also providing coverage under social security. The remaining nine states maintained a separate teachers' retirement system without social security coverage. A statewide public employees' system to which teachers belong was available in 21 states with 17 providing social security coverage. Only four states with a statewide employees' system did not provide social security.

Vesting rights are an important aspect of retirement plans and all states have included provisions for obtaining a vested interest in the system. Based on a specified number of years of service, a teacher attains vesting rights. This allows the teacher to leave a school system leaving his contribution in the retirement system and to accept a deferred annuity until he qualifies for the retirement benefits. Among the 50 states, the legally required years of service to obtain vesting rights ranged from immediately in only two states to 20 years in three states. The most common requirements were five years in 15 states and ten years in 21 states. North Carolina has enacted vesting rights requiring five years of service with reduced benefits at age 60 and full benefits with thirty or more years of service or at age 65. The contiguous states required years of service ranging from five to fifteen years with benefits payable at age 60.

The calculation of the retirees' monthly retirement payments based on years of service and salary level is critical to the retired person. While the individual employee would prefer that the highest annual salary be used, states use a three-to five-year average salary figure in determining retirement benefits. The final average salary is calculated on the basis of three years in 21 states and on the basis of five years in 24 states. North Carolina's final average salary is based on the four consecutive career years in which the employee's salary was the highest. This is comparable to the regional states.

Total teacher retirement contribution varies from state to state depending on the required rate and on whether the state's retirement system also provides social security coverage. North Carolina is comparable to the contiguous states with a total employee retirement contribution of 11.85 percent. In 1977 the employee's rate was 6 percent for retirement and 5.85 percent for social security. Among the regional states, only Kentucky does not provide social security coverage for its teachers.

Comparing the required employer's contribution rate among states is a difficult task because of the lack of uniform state participation in the social security system. Also, some states do not use a fixed contribution rate, but have implemented a system in which the rate is determined actuarially each year. North Carolina employers' contribution rate for 1976-77 was 9.12 percent plus the 5.85 percent share of social security, a total of 14.97 percent.

Economic Indicators

Salary and fringe benefits including retirement plans provide an important basis for the analysis of the economic status of educational personnel. Salary levels, however, must be further analyzed in terms of other economic indicators that determine an individual's standard of living. This section explores several economic indicators that impact on instructional salaries.

One important aspect of determining the economic status of public school personnel is the relative cost of living. Table 3-4 indicates the costs of a budget for a hypothetical family of four persons. The comparisons are made for a low, intermediate, and high budget in the southern region of the United States. In setting salary levels, policy makers must consider the budget level that is appropriate for educational personnel. This is a value judgment with political implications. In Durham, North Carolina, the budget levels for the family of four ranged from a low budget of $9,600 to a high budget of $21,205. The cost of the intermediate budget was $15,525. It is important to note that the average annual instructional salary in North Carolina ($12,-337) was below the cost of the intermediate budget. Among the contiguous states all budget levels were below the national average for urban and metropolitan areas. Since North Carolina is a diverse state in terms of metropolitan and nonmetropolitan areas, the family budget costs will vary according to the particular place of residence. In determining instructional salaries, careful consideration should be given to the income required for a specified standard of living in a given area.

A more general economic picture of North Carolina and the regional states can be obtained from

Table 3-4

Annual Costs of a Budget for a Four Person Family 1976

Southern Region	Lower Budget	Budget Index (Budget as a Percent of U.S. Average)	Intermediate Budget	Budget Index (Budget as a Percent of U.S. Average)	Higher Budget	Budget Index (Budget as a Percent of U.S. Average)
Atlanta, Ga.	$ 8,998	98	$14,639	91	$21,410	98
Durham, N.C.	9,050	98	15,585	98	22,205	98
Nashville, Tenn.	8,708	91	14,671	91	21,387	90
Non-Metro Areas	8,889	96	15,855	99	19,448	82
U.S. Urban	10,041	109	16,236	100	23,750	100
U.S. Metro	10,189	101	16,500	102	24,402	103
U.S. Non-Metro	9,588	96	14,685	90	20,486	86

Source: U.S. Department of Labor, Bureau of Labor Statistics Autumn, 1976, Urban Family Budget and Comparative Indexes for Selected Urban Areas, Washington, D.C.: Author, April 27, 1977, Tables 1-8.

use of Effective Buying Income (EBI), an economic indicator developed by *Sales and Marketing Management*, (1977). EBI is personal income less personal tax and nontax payments; the resultant figure is often referred to as disposable income. EBI was developed to be used as a bulk measurement of market potential, indicating the general ability of the consumers to buy in the market area. Since instructional personnel also are consumers in the marketplace, this economic indicator is a relevant comparative measure showing individuals' ability to buy the goods and services necessary for a given life style. The per capita EBI in the region ranged from $4,539 in Kentucky to $5,294 in Virginia. North Carolina's per capita EBI was $4,734, nearly the regional average, but only 87 percent of the national average (*Sales and Marketing Management*, 1977). Educational personnel as consumers in North Carolina are somewhat restricted in their general ability to buy, given the lower levels of EBI.

Tax burden is defined as taxes paid relative to income. It is a fiscal measure indicating the proportion of income that is used to pay taxes. The most general indicator of level of taxation is per capita tax burden. Although per capita tax burden does not demonstrate tax equity among different income classes, it does show the composite effect of a tax system on all individuals. All regional states have a per capita state and local tax burden well below the national average. North Carolina's tax burden was only 72 percent of the national average and ranked fourth in the region. The per household federal tax burden also was less than the national average among all regional states except in Virginia where it was at the average. The federal tax burden in North Carolina was 83 percent of the national average. The residents of North Carolina and the regional states on the average have low levels of tax burden from state and local taxes and federal taxes.

A more important measure of relative tax burden is the tax burden by family income class. This is a clearer measure of tax equity since it focuses on the impact of taxes on specific income classes rather than on aggregate income. North Carolina's family tax burden ranged from 10.3 percent at the $5,000 income level to 8.8 percent at the $50,000 income

Table 3-5

Fiscal Capacity Measures for North Carolina and Contiguous States

State	Personal Income per Average Daily Membership (1975)			Balanced Tax System per Average Daily Membership (1975)		
	Income	Rank	Percent of U.S. Average	Balanced Tax System	Rank	Percent of U.S. Average
North Carolina	$[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
South Carolina	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Tennessee	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Kentucky	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Virginia	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Georgia	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
National Average	[illegible]		100	5,140		100

Source: Sparkman, W. E. *Equity of Taxation.* (A component of the Arkansas School Finance Study.) Unpublished Manuscript, Kansas State University, December, 1977.

Table 3-6

State Effort for Public Education in North Carolina and Contiguous States

State	State and Local Expenditures From Own Sources as Percent of Personal Income			State and Local Expenditures From Own Sources as Percent of Balanced Tax System		
	Percent	Index	Rank	Percent	Index	Rank
North Carolina	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
South Carolina	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Tennessee	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Kentucky	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Virginia	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Georgia	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
U.S. Average	[illegible]	100		[illegible]	100	

Source: Sparkman, W. E. *Equity of Taxation.* (A component of the Arkansas School Finance Study.) Unpublished Manuscript, Kansas State University, December, 1977.

level (Lile, 1975). Clearly, the families in the lower income class bear a disproportionate share of the state and the local tax burden in North Carolina. The state and the local tax system in North Carolina, however, is not as regressive as the United States as a whole and more progressive than any state in the region except South Carolina.

By observing the percentages in the various income classes, one can obtain an idea of the degree of tax equity and the relative impact on teachers' salaries. All of the regional states have a regressive tax system when tax burden is determined as the percentage of family income at different income levels. Tennessee has the most regressive tax system among the regional states.

Fiscal Capacity and Tax Effort

Fiscal capacity refers to the total economic resources available to a government for tax purposes. In a sense, fiscal capacity indicates the economic well-being of a taxing jurisdiction. It represents the base that a government uses or potentially could use for public revenues. Measures of fiscal capacity are relative, not absolute, because the size of the public sector depends upon people's willingness to substitute public goods for private goods.

Two general approaches are used to measure fiscal capacity. One method uses personal income or some derivative on the basis that taxes ultimately are paid from current income. The other major approach measures the tax bases available within a jurisdiction and compares the revenue that could be raised against given rates of taxation or revenue derived from a model or representative tax system. The methods used to determine the fiscal capacity of North Carolina were based on the two general approaches. One measure was Personal Income per ADM and the other was the Balanced Tax System per ADM. The Balanced Tax System was a composite of actual state and local tax revenues plus the estimated under-utilized tax potential of 15 major taxes. This system reflected actual practice plus revenue potential.

Table 3-5 shows the results of the fiscal capacity measures for North Carolina and the contiguous states. North Carolina ranked 38th among the 50 states with a fiscal capacity almost 20 percent below the national average according to Personal Income per ADM. When fiscal capacity was measured by the Balanced Tax System per ADM, North Carolina ranked 48th. According to both measures of fiscal capacity, North Carolina is a relatively poor state.

Tax effort is a measure quantifying the extent to which a government uses its fiscal capacity for tax purposes. It is determined by the ratio of taxes or a proxy measure, usually expenditures, to some measure of fiscal capacity. For the purposes of this study, state effort was determined by dividing total state and local expenditures for public schools by each measure of fiscal capacity; that is, Personal Income and the Balanced Tax System. Table 3-6 shows the results. North Carolina was above the national average according to both effort indices. Among the regional states, North Carolina's state effort was first.

Factors Affecting the Employment of Teachers

Supply/Demand of Teachers

This section of the report focuses on teacher supply and demand in the state of North Carolina. Two specific issues are explored: one, whether there are shortages and/or surpluses in certain fields of education; and, two, the relation of any identified shortages and/or surpluses to the production of teachers by North Carolina teacher training institutions.

Demographic changes in the United States during the 1960s and 1970s have had important implication for public education, particularly the teaching force. Beginning in the late 1960s, the birth rate in the United States began to moderate and decrease. Public school enrollments subse-

quently began to level off and decline after 20 years of sustained growth. The first decrease in public school enrollments (K-12) came in Fall, 1972. The National Center for Education Statistics (NCES) projected that the enrollment decrease would continue until Fall, 1985. The total number of classroom teachers was projected to decline for the first time in Fall, 1977, and continue to decline until Fall, 1983.

The impact on the teaching force of the declining enrollments will be great and only slightly moderated by two factors. The reduction in the average pupil/teacher ratio will cushion some of the impact. The addition of new programs especially in exceptional education and vocational/technical training will create some additional demand. However, declining enrollments coupled with increasing education costs will place practical limits on the further reduction of pupil/teacher ratios or on the growth of new programs as a means of stimulating demand for new teachers.

The basic problem is not simply a matter of reduced demand. The related issue of teacher supply creates an important dimension that must be considered. The United States Commissioner of Education estimated that during 1976-77 the supply of teachers would exceed demand by approximately 60,200 (*Projections of Teacher Supply and Demand to 1980-81*; 1977). The supply/demand estimates of the National Education Association (NEA) are even more discouraging. The NEA projected that the total supply of teachers in 1976-77 would be 302,760 while the actual demand would be only 137,050, an estimated surplus of 165,700 teachers (NEA, *Teacher Supply and Demand*, 1977). The NEA's estimate of total teacher supply is rather substantial and is probably a figure inclusive of all individuals trained as teachers but otherwise employed or not seeking employment.

The two primary sources of teacher supply are: (a) beginning teachers, those recent graduates eligible to teach for the first time, and (b) the reserve pool, those persons qualified to teach but not currently teaching (*Projections of Teacher Supply and Demand to 1980-81*; 1977). Both components of teacher supply have become extremely important. Colleges and universities expanded their teacher training programs during the late 1950s and 1960s in response to the increased demand for new teachers. Once such programs were in place, it has been difficult to cut back or eliminate duplicate or low production programs. The University of North Carolina, General Administration, completed a major Teacher Education Review Program during the academic year 1976-77. A portion of the review consisted of an analysis of degree programs and degree program tracks in terms of strength, productivity, and need. Recommendations for discontinuation, further review, and reduction in productivity were made according to where a degree program or program track was placed in the matrix (University of North Carolina, 1977). The reserve pool of teachers has begun to place a strain on the market as individuals are seeking to reenter the teaching profession for a variety of reasons.

While there is a general surplus of teachers, specific areas of assignment show only a slight variance from the norm. Among 23 areas of assignment, the NEA projects an oversupply in all but five areas. A small demand was shown in the elementary areas of music and physical and health education and in areas of secondary agriculture, trade, industrial, and technical courses. The areas of greatest surplus were social sciences, English, language arts, elementary instruction, and secondary physical education (NEA, 1977).

It remains to be seen whether undergraduate students will respond to the market forces of oversupply and select occupational areas that are in greater demand. Many colleges and universities are facing declining enrollments in teacher education programs. It is difficult to determine whether the enrollment decline is a reflection of a declining student enrollment or whether it is a function of a shift in occupational preference.

The state of North Carolina, cognizant of the national trends in teacher supply and demand, has provided important information regarding the in-

trastate teacher market. One of the reports published by the State Department of Public Instruction is an annual report on teacher supply and demand. The reports of the University of North Carolina also contain documentation of the status of teacher training programs in the University. These documents provide important information for planning and management purposes and serve as the basis for this section of the report.

The demand for teachers basically consists of three sources: changes in student enrollment, changes in the pupil/teacher ratio, and job turnover. Demand also can be affected by the addition of new programs or the replacement of employees with substandard preparation.

Public school enrollment in North Carolina declined in Fall, 1969, after almost 20 years of growth. Some of that decrease can be explained by the concurrent increase in nonpublic school enrollment occasioned by the desegregation effort. Kindergarten classes became part of the public school system in Fall, 1973, thus increasing the total public school enrollment. While the kindergarten program was being phased in from 1973 to 1976 with enrollments which increased 193 percent, enrollments in grades one through twelve decreased by 2.1 percent in the same period (Padilla, 1977).

The total employment of public classroom teachers is projected to increase to 66,400 in 1981 (Padilla). This represents a 22.2 percent increase in total public teacher employment from 1973, which is unexpected based on a 6.7 percent decrease in total public school enrollment. Padilla acknowledged that the 1981 teacher employment projection was optimistic and suggested that the increase would be accounted for by further reductions in the pupil/teacher ratios in the public schools.

During the five-year period from 1972 through 1976, the total number of new teachers prepared by all colleges and universities declined from 6,937 to 6,466. The total number of new teachers employed decreased from 4,971 to 3,282 during the same period. There was, however, an increase of 633 in the employment of new teachers from 1976 to 1977. Total demand from all sources also decreased from 5,829 to 5,002.

The preparation of teacher education majors appears to be stabilizing among the colleges and universities of North Carolina. The recent increase in the employment of new teachers may reflect better reporting of employment rather than an actual increase in demand.

This is suggestive of the "no growth" posture in which education operates today. Even with bleak projections for the immediate future in terms of teacher preparation and employment, Padilla noted that the 15 campuses of the University of North Carolina involved in teacher training programs expect to award nearly 20 percent more bachelor's degrees in 1978 than they did in 1975 (Padilla, 1977). This would appear counterproductive in terms of the projected lower levels of teacher demand.

The Department of Public Instruction has indicated that certain academic areas are in demand, others are in balance, and many are oversupplied with instructional personnel as shown in Table 3-7 (Department of Public Instruction, 1977).

Information should be used with caution in counseling prospective teacher education majors into program areas since the data are based upon the subjective opinions of local superintendents. It provides general indications of over- and undersupply. Such a counseling strategy, however, could create additional imbalances in the short run as students select areas in demand and neglect those that are immediately oversupplied. The teacher labor market may self-correct without intervention.

The Southern Regional Education Board (SREB) reported that no southern state shows favorable market conditions for education graduates during the decade of 1970-80 (Engles and Galambos, 1975). Severe oversupplies of teachers were projected for Alabama, Arkansas, Kentucky, Louisiana, and West Virginia. The SREB concluded that "the regional outlook is correspondingly bleak" (Engles and Galambos, 1975). Only South Carolina and Virginia were estimated to have a slight annual demand for education graduates dur-

Table 3-7

Supply/Demand Balances
for Course Areas in North Carolina

Academic Areas In Demand	Supply/Demand In Balance	Oversupply
Industrial Arts	Home Economics	Social Sciences
		Social Studies
Reading Instruction	Art	History
		Psychology
Agriculture	Business Education	Sociology
		Political Science
Vocal Music		
Natural Sciences	Spanish	English
Mathematics		
Chemistry		Some Foreign Languages
Physics		
General Science		
Exceptional Education		

Source: State Department of Public Instruction, Raleigh, North Carolina, 1977.

ing the 1970s. North Carolina is projected to have an annual surplus of nearly 1,100 education graduates during the time period. Some of the surplus could be absorbed in the neighboring states, but the regional oversupply would tend to mitigate that possibility.

Relation of Salaries and Pupil/Teacher Ratios to the Fiscal Ability And Tax Effort of the Local Administrative Units

How do North Carolina teacher and administrator salaries and pupil/teacher ratios relate to fiscal ability and effort of selected administrative units? In addressing this question, the special circumstances concerning salaries in North Carolina were taken into consideration. Rather than study the absolute levels of salaries in local administrative units, it was decided to address attention to the local supplements, if any. In this way, emphasis could be placed upon the amount by which salaries in each unit were in excess of those listed in the state schedule. In focusing concern upon local supplements, the differences among local units in the portions of salaries arising from differing amounts of experience and degree levels were excluded from the analyses; this avoided obscuring the impact of local supplements. Measures of local supplements were studied for the following positions.

1. Teachers. This measure was the arithmetic mean of the local supplement at four salary levels — the top and bottom of the graduate (G) and baccalaureate (A) schedules with the latter given four times the weight of the former. In this and the following three categories, the ideal would have been to take into consideration the actual step on the salary schedule occupied by the appropriate num-

ber of individuals in each local administrative unit. Similarly, the exact number of teachers in each schedule in each unit could have been computed by unit, but the extent to which these more refined data would have altered the findings was judged to be minor.

2. Principals. This measure was the mean of the local supplements for four salary levels — the top and bottom levels of the elementary principals' and secondary principals' schedules.

3. Supervisors. Since virtually all supervisors in North Carolina have graduate degrees, this measure was based on the mean of the local supplements for the top and bottom levels for the supervisor-graduate (SG) credential.

4. Assistant and Associate Superintendents. This measure was the simple mean of the local supplement for the minimum and maximum levels for these offices. (Nine of the 49 units did not have an assistant or associate superintendent. In the correlational analysis to follow, these nine units were excluded from this variable only.)

5. Superintendents. No summary statistic was necessary since each local administrative unit employed only one superintendent. The local salary supplement was taken from State Board of Education records. Only six systems did not pay superintendents a supplement.

Use of these summary measures facilitates a comparison among the districts in the sample (see Appendices). Teacher supplements ranged from zero to $1,512 with a mean of $307. Average local supplements for principals' salaries also revealed great diversity. The range was from zero in over one-third of the local administrative units to $3,170 in Mecklenburg; the mean was $821. It is evident that, for whatever reasons of effort or circumstances, units in North Carolina are not providing equal salary benefits to teachers or principals.

The mean local supplement for supervisors was $1,069, while the values ranged from zero in nearly one-third of the units to $6,305 in Mecklenburg. For assistant and associate superintendents, the mean for the selected 41 units having such a position was $3,072 and the range was from zero to $10,990. Finally, the local supplements of superintendents had a mean of $5,391 and a range from zero in Cherokee and Polk to $12,434 in Durham. It is also evident that the professionals in these administrative positions in North Carolina do not at present receive compensation on a uniform salary schedule. Some units are in a position to be more competitive than others in their recruitment activities.

The correlation coefficients between various pairs of these five local supplements vary from .46 to .73. It seems that local administrative units that offer attractive local supplements for one kind of professional position also tend to offer favorable local supplements for the other four kinds of positions.

Fiscal ability and effort were investigated by means of four different measures. Two of these measures were conventionally based upon assessed valuation per ADM. The measure was of local ability with respect to property values; it was the adjusted valuation per ADM. The second measure was of local effort with respect to property values; it was the ratio of local expenditure per ADM to adjusted valuation per ADM. Two additional fiscal measures were used in an attempt to capture the relationship between income and the ability to pay local taxes. It was reasoned that units with similar assessed valuation per ADM might have substantially different income levels per ADM and that the latter would significantly influence the ability and willingness of units to support education. The third measure was therefore an index of local ability with respect to income level; it was the personal income per ADM. The final measure was of local effort with regard to income; it was the ratio of local expenditure per ADM to personal income per ADM. In summary, the measures were: (a) local ability re: property, (b) local effort re: property, (c) local ability re: income, and (d) local effort re: income.

The adjusted valuation per ADM had a mean of $58,604 and varied from a low of $22,487 in

Cherokee to a high of $129,162 in Macon. This range represents over a 500 percent variation among selected local administrative units in the amount of adjusted valuation behind each pupil. The local expenditure per ADM divided by the adjusted evaluation per ADM averaged .00367 and ranged from lows of .00148 in Jackson and Macon to highs of .00627 in Johnston. This range represents a 430 percent variation from least to most effort. Personal income per ADM had a mean of $17,890 and varied from $9,650 in Nash to $46,117 in Chapel Hill; this is a 478 percent range. The local expenditure per ADM divided by the personal income per ADM averaged .0119 and ranged from lows of .0050 in Davidson and .0051 in Onslow to highs of .0224 in Currituck and .0202 in Nash. This range represents a variation of over 400 percent in the percentage of local income devoted to local expenditures.

The relationship among the four local fiscal characteristic measures was determined. Perhaps the most important of these correlation coefficients are the slightly negative entries. Whether local fiscal characteristics are defined in terms of assessed valuation or in terms of income, there is a minor negative relationship between ability and effort. In other words, the richer units do not, as a group, expend quite as large a portion of their resources on education as do the poorer units. This is more important in that even the two measures of fiscal effort are regressive. That is, they do not make allowance that communities must first feed, house, and clothe their children from available resources before they commit discretionary funds to educational purposes.

Correlation coefficients were computed to reveal the relationship between each of the five measures of local supplement and each of the four measures of local ability and effort. Examination of the correlations reveals that local ability with regard to income was correlated higher with each of the five local supplements than was any of the other local fiscal characteristic variables. The local administrative units with the greatest personal income per ADM are the units that tend to offer the largest salary supplements to persons holding each of the professional positions.

The results of the correlation between pupil/teacher ratio and each of the four measures of local fiscal characteristics are much the same. The units with the greatest income, with the greatest assessed valuation, and making the greatest fiscal effort tend to achieve lower than average pupil/teacher ratios; but the relationship is far from perfect. When the highest of these correlations (-.49) is used, its square (.24) provides an estimate of the amount of variance among units in pupil/teacher ratio that is accounted for by the local fiscal characteristic. Only 24 percent is so explained. Seventy-six percent of variance among units in pupil/teacher ratios is accounted for by variables other than the most related local fiscal characteristic.

This measure of local ability with regard to personal income was also correlated with the percentage of teachers in the 30-49 age bracket and with the percentage of teachers holding a G certificate. These correlation coefficients were .45 and .58, respectively. These findings suggest that units having more personal income per ADM attract and/or retain a teaching force that possesses these desired characteristics to a greater extent than do units having more modest personal income levels per ADM.

These findings assume even greater significance when they are seen in relation to the correlation of .67 of personal income per ADM and percentage of teachers who are locally paid. Units with greater personal income not only tend to have teachers who have higher certificates, are better paid, and are more experienced in age, but they also have more teachers for their size unit according to ADM.

An important question is whether the ability of some units to employ locally paid teachers is related to the mean salary of their state paid teachers. It seems reasonable that units would employ the strategy of putting their lowest paid teachers on local pay and placing their highest paid teachers on state pay. To investigate this possibility, each unit's

mean teacher salary (before local supplement) for state paid teachers was computed. The correlation coefficient between this mean salary and the percentage of locally paid teachers in the units was found to be .60. This suggests that the above strategy may be in use. In any event the finding indicates that units having funds with which to employ locally paid teachers also manage to have the state pay more, on the average, for the state paid teachers than do units employing fewer or not locally paid teachers.

Part of the explanation for this .60 correlation between percentage of teachers who are locally paid and mean salary paid by the state for state paid teachers may be attributed to the greater percentage of teachers holding graduate degrees in the more fortunate units. That this latter explanation is not, in itself, sufficient to explain the .60 correlation is demonstrated by the salaries, before local supplements, of state paid and locally paid teachers. The mean salaries are $9,306 and $11,184 for locally and state paid teachers, respectively. Units that employ locally paid teachers tend to designate the locally paid teachers as the ones who receive smaller salaries and the state paid teachers as the ones who receive larger salaries. This tendency gives financial leverage to units that employ locally paid teachers.

Of the 49 units sampled, 47 employed one or more local teachers. Of these 47 units, only three, Anson, Onslow, and Polk, did not pay lower mean salaries for local teachers than the state paid for state teachers in these units. Apparently these units were not using the described strategy for gaining leverage for locally paid salaries although other factors could be involved. Ironically, these three units needed the leverage; each had local expenditure per ADM that was well below the state average. Two other units, Bladen and Cherokee, also did not use the leverage strategy because they had no locally paid teachers.

In summary, it was found that great disparity exists among units in salary supplements for teachers and administrators. When local fiscal characteristics were examined, great differences were revealed in the extent to which units are financially able to contribute to educational expenses. In general, the poorer units showed a slight tendency to be committing a greater proportion of their resources to education than the more advantaged ones.

Local administrative units that are able to employ a sizable proportion of locally paid teachers have a double advantage. Over and above the additional teachers, the units tend to be able in the process also to increase the mean salary paid by the state for state teachers. This leverage works to the disadvantage of poorer units that do not have local funds with which to secure the leverage.

Section II — Status of Educational Programs

Whether one interprets equal educational opportunity in terms of equal inputs (which might in actuality require varying resources as needed to achieve the requisite outputs), or whether one defines the concept in terms of equality of process, the two definitions cannot be considered in isolation. Financial equity and educational program quality are no longer two separate concerns but are linked. Thus, the investigation undertaken by this study does not follow the traditional style of input-output relationship studies which attempt to determine to what degree certain inputs contribute to certain outputs. Instead, this portion of the study will focus on those input factors which affect educational program quality — specifically, the measure of educational program offerings. In most states, where attempts at financial reform have increased the school district's budget, dollars have been used to improve program quality and equality primarily by increasing the breadth of educational programs.

For educators, the goal is to provide for the educational needs of children in making thorough and comprehensive programs available. However, what constitutes quality education is not easily determined. Some researchers have demonstrated that teacher verbal ability (Bowles, 1970; Coleman, 1966; Hanushek, 1968; Levin, 1970), teacher experience (Burkhead, 1967; Katzman, 1968; Thomas, 1962), and other related teacher qualities such as salaries (Kiesling, 1969) educational institution (Summers & Wolfe, 1975) are statistically associated with pupil achievement. Related in-school variables, such as class size, school size, and others, have been identified as affecting some students, although not all (Summers & Wolfe, 1975). Nevertheless, most school-related variables (facilities, administrator quality, per pupil expenditures, materials) have not been consistently (and statistically) related to pupil performance or output.

Professional committees, researchers, and educators have identified variables they feel add to the opportunities that are provided children through the schools. Such lists often include efficient operation, teacher qualifications, number of subjects and sources, special services, enriched programs, counseling and library programs, availability of modern instructional media, experimentation and innovation, systematic and organized evaluation, appropriate facilities, and community support. Although these authorities accept the fact that numerous factors may contribute to the overall quality of a school, it is agreed that certain aspects of school quality may be influenced by factors such as professional training and certification of teachers, teaching load, and the scope of the curricular program.

The aforementioned variables are not as directly related to expenditures as to school and/or school district size. Primarily due to matters of scale, small schools offering only a limited range of programs and services will have as high a per pupil expenditure level as larger districts (Thomas, 1968). For example, Morris (1964), in a study of 3,727 secondary schools in nine southern states, found an increase in subject offerings to be closely related to both size and per pupil expenditures. However, when enrollment exceeded 1,000 pupils, size seemed to be the more significant factor in determining program offerings.

McPhail (1966) also concluded that the size of a school district is a more important indicator of a quality program than expenditure. A small inefficient district could spend more per pupil than a large efficient district and still have a lower quality educational program.

Other studies have indicated that small schools had a lower proportion of teachers with graduate training (Jackson, 1966; Weaver, 1961), master's degrees (Bolin, 1963, Collinsworth, 1961; Kowitz & Sayers, 1959; Maxley & Thomas, 1969), advanced certificates (Bolin, 1963), teaching experience (Bolin, 1963; Maxley & Thomas, 1968) (Moeller, 1968). Furthermore, several studies have concluded that size appeared primarily responsible for teachers being assigned to classes in their primary areas of preparation (Brunvold, 1965; Oviatt, 1966), and for having to instruct in more than two academic areas (Maxley & Thomas, 1968).

Patterson (1964), reporting the findings of a survey of 13,707 professional personnel, found that as the size of schools increased: (a) the percentage of experienced teachers increased, (b) the number of college trained teachers increased, (c) the percentage of teachers with standard certificates increased, and (d) the number of units being taught by certified teachers increased. A general conclusion was reached that as the size of secondary schools increased, the qualifications of teachers, principals, guidance counselors, and librarians were higher.

Concerning school size and curricular offerings, the data are equally as convincing. Larger schools with greater numbers of students can and do offer greater program breadth and greater services than their smaller counterparts. The few exceptions would limit those cases where an unusual amount of local wealth supports a small pupil enrollment.

The results of a 1966 Illinois study indicated that in ten of thirteen curricular areas, the relationship of size to number of credits was consistent in that the larger the high school, the greater the number of credits offered in each curricular area (McLure, 1966). In a later Illinois study (McLure, 1975), it was found that the breadth of the program was highly correlated with the size of high school, explaining 55 percent of the variance. In addition, studies by Davis (1958), Hill (1963), Kolze (1968), Maxley and Thomas (1968), Ottey, (1971), and Weaver (1961) observed relationships between school size and breadth of program, depth of program, major course sequence, advanced and total credits, usable library books, and special programs.

Studies conducted on a regional basis have established a similar relationship between school size and breadth of educational program and services. Jackson (1966) examined the size factor in relationship to secondary school program offerings. He used twelve curricular areas and three organizational patterns to represent the broad scope of the secondary school program. His findings indicated that a strong positive relationship existed between school size and course offerings in both academic and nonacademic areas, regardless of the grade organizational patterns. Pronounced increases in number of courses offered occurred when enrollments reached 1,000 or more.

Jackson's study found that courses in art, music, industrial arts, and certain vocational areas were seldom offered in schools at the lower enrollment levels. Even more significantly, he found that there were striking differences in course offerings among the size categories in the basic skills areas, such as English, mathematics, science, and social studies, which further verify the relative superiority of large schools in terms of curricular programs (McLure, 1975).

A nationwide study published by the National Center for Education Statistics in 1976 examined secondary course offerings by size of school. Numerous courses in the areas of English, language arts, social studies, mathematics, natural science, foreign languages, health and physical education, safety and driver education, music/art, industrial arts, home economics, trade and industry, business, agriculture, and bilingual education were shown to be more often available in larger high schools than in smaller ones (Ostendorf & Horn, 1976).

Project Talent best summarizes the relationship which seems to exist between school size and breadth of programs: "It would seem that larger school size is a proper and important objective in order to provide greater variety and depth of course offerings and to make available special services such as groupings, acceleration, and guidance" (Great Plains School District Organization Project, 1968).

A North Carolina study similar to those discussed above is reported in the following pages. Variables related to wealth, size, and location were examined, and variances in curricular offerings and related in-school variables were identified.

The North Carolina Case Study

The breadth and depth of curricular offerings which are present in the public schools of North Carolina were investigated in this case study. Related variables, such as pupil/teacher ratio, graduate certification of teachers, experience level of teachers, core classes required for graduation, and total graduation credits required, were also studied in relation to various local and personal wealth factors. It was the purpose of this study to determine the influence of wealth, size, and geographic location on variables under the control of school officials.

Aggregated Data

In the state of North Carolina, significant variations in course offerings were found. This research showed that size of a school is statistically associated with the number of class alternatives, and that local wealth may also be influential in deter-

mining supplemental offerings in cultural arts and foreign languages. These differences were not only found when comparing regions or counties, but were observed within districts. Utilizing data from the 72 selected districts (see Appendices), four categories were examined as to range of differences. Regarding different course offerings, the range was from nine to 52. Pupil-teacher ratios varied from 2.4 to 1 to 44 to 1. The percentage of teachers with graduate certification ranged from 6.3 percent to 50 percent, while the percentage of teachers with maximum experience ranged from 16.5 percent to 52.6 percent.

When correlating school size data with the number of course offerings and related school variables, it was found that a significant (.01 level) positive relationship existed between ADM and course offerings in English, math, science, social studies, foreign languages, vocational, cultural arts, physical education, and others. Of the course offerings, only two classifications were not positively related. However, size was not statistically related to pupil/teacher ratio, percentage of teachers with maximum experience, core classes required for graduation, or total graduation credits required. As school size increases, so do course offerings; that is, pupils in large schools have more curricular alternatives than pupils in small schools. However, size does not appear to determine the availability of required core offerings or the total number of credits which must be successfully completed prior to graduation.

Mountain Region

Except in two curriculum areas, schools in the Mountain region — whether containing one, three, or four high school grades — show a reduction in the mean number of course offerings and in total mean number of course offerings as the size of the school decreases. With these exceptions, the data related to the individual curriculum areas and the total mean number of course offerings for the Mountain schools were consistent with research findings; that is, the number of curriculum offerings increases as the size of the school increases.

In several instances the mean number of course offerings in a curriculum area in the large school of a particular grade classification was double that of the small school (English and physical education in the schools containing one high school grade, social studies and exceptional programs in schools containing three high school grades, and math and vocational education in schools containing four high school grades). In a few instances, the mean number of course offerings in a particular curriculum area in the large school was even triple that of the small school (foreign languages in the schools containing three and four high school grades and cultural arts in schools containing four high school grades).

Even among schools of the same size and grade classifications, there existed significant ranges in the number of offerings available to students in certain curriculum areas. For example, a range of 14 in vocational offerings existed in three-grade, medium schools; a range of 27 in vocational offerings in four-grade, large schools; a range of 17 in vocational offerings in four-grade, medium schools; a range of 24 in vocational offerings in four-grade, small schools; a range of nine in foreign language offerings in three-grade, medium schools. These data would seem to indicate that not only can size influence the number of different offerings, but also that local priorities and school officials may determine program content.

With regard to the percentage of teachers with graduate certificates and to the percentage of teachers with maximum experience, no identifiable trends existed. Only one positive relationship was identified for certification (one-grade level), while one negative relationship existed for experience (four-grade level).

Piedmont Region

The relationship between school size and educational program offerings was shown to be more

positive for the Piedmont region than for the Mountain region. The data relative to the Piedmont region indicated that the mean number of offerings in the various curriculum areas and in total number of course offerings increased as school size increased in the three grade classifications more consistently than did the comparable data for the Mountain region with a few exceptions. Again, as was the case for the Mountain region, the data generated from the Piedmont region schools were consistent with those obtained in other studies that examined the relationship between size and educational programs. Typically, there were certain curriculum areas where the differences among the mean number of offerings of small, medium, and large size schools were most pronounced (foreign language offerings in schools of all three grade classifications, and cultural arts in schools with four grades). The same curriculum areas showed the most pronounced variations in the Mountain area schools.

In another item of analysis, the data for the Piedmont region schools yielded results similar in nature to those obtained for the Mountain region; that is, the variations that existed among mean number of course offerings available in certain curriculum areas even among schools of the same size. There was no curriculum area in which there was not some difference in the range of offerings, even in schools in the same region, of relatively the same size, and containing the same number of grades.

For the Piedmont region, the data related to percentage of teachers with graduate degrees and with maximum experience were more consistent with findings of other reported studies than were the Mountain region data. In schools containing one, three, or four high school grades, the percentage of teachers with graduate certificates increased as the size of the school increased. The same relationship between percentage of teachers with maximum experience and size was found in schools containing one high school grade but was not found in the school containing three and four high school grades. The percentage of teachers with maximum experience did not increase as school size increased.

Coastal Region

Coastal region data indicate that the relationship between school size and mean number of course offerings in the various curriculum areas and in total mean number of course offerings was positive. However, the relationship was less consistently positive than in either the Mountain or the Piedmont region. Again, as in the other two regions of North Carolina, the relationship was most consistent in schools containing four high school grades and one high school grade. However, as was also true in the other regions, there existed curriculum areas in which the reverse relationship was found.

The data for schools in the Coastal region indicated that the differences between the mean number of offerings of large, medium and small size schools were most pronounced in certain curriculum areas (foreign languages, cultural arts, physical education, and vocational).

In the Coastal region, in addition to variations in mean number of course offerings by schools of different sizes, there also existed significant ranges in the number of certain curriculum offerings available to students, even among schools in the same size classification. As in the other two regions, the areas in which the greatest ranges consistently existed were vocational education, foreign languages, and social studies. Less pronounced differences existed in all other curriculum areas. Thus, in the Coastal region, as in the Mountain and Piedmont regions, not only can the size of the school affect the number of offerings available to students, but also the particular school the student happens to attend.

As far as the data relative to percentage of teachers with graduate degrees and where maximum experience is concerned, no consistent statistical relationship existed between these variables and school size.

An Analysis of the Influence of Wealth on the Educational Program

The wealth or ability of a local school district is usually expressed in terms of total assessed value, assessed value per pupil in average daily attendance (ADA) or ADM, or some measure of personal income. In most states, depending on the nature of the state support formula, the level of funding of education will depend on local wealth. In addition to the ability of a school district to support education, tax effort will influence the level of the expenditure per pupil.

The fact that one district is more wealthy than another district, has a higher tax, or spends more per pupil is not important in and of itself. As pointed out previously in this study, some districts may have high expenditures per pupil, but still have educational programs of limited quality. What is important is the extent to which variations in district wealth, tax rates, or expenditure levels create disparities in the quality of educational programs and opportunities. Thus, one of the major purposes of this study was to investigate the extent to which wealth, tax effort, and expenditures influence educational program opportunities in North Carolina.

If total assessed value per ADM is utilized as a measure of wealth, analysis reveals this measure to have a significant positive correlation with the areas of foreign languages, cultural arts, and exceptional programs.

When personal income was used as a measure of wealth, the same curriculum areas were found to have a significant positive correlation (foreign languages, cultural arts, and exceptional programs) as when total assessed valuation was used as a measure of wealth.

Turning to the influence of tax levy on educational program opportunities and quality, analysis revealed this variable was significantly, positively correlated to exactly the same curriculum areas as was total assessed value (foreign languages, cultural arts, and exceptional programs).

Given that in most states local school district ability and effort are often determinants of expenditure level, it might be expected that expenditures would show the same relationship to the educational program as did these variables. An analysis of the data for North Carolina schools indicated that this was partially the case. Total expenditure had a significant positive correlation to certain courses: foreign languages, cultural arts, and exceptional programs (exactly the same curriculum areas which were positively correlated in several measures).

When expenditures were expressed in terms of ADM, similar results were obtained. Expenditure per ADM had a significant positive correlation with foreign languages and cultural arts.

Wealth, tax effort, and expenditures influence educational program opportunities in North Carolina schools, at least in certain areas. These variables had their greatest impact in influencing offerings in the areas of foreign languages, cultural arts, and exceptional programs. These findings were consistent with those reported in similar studies of the relationship between wealth and educational program opportunities. Even though such curricular alternatives are referred to as "enrichment areas," the fact that some students are being denied or have limited access to certain courses and programs is in contradiction to the concept of equal educational opportunity. Furthermore, differences in scale influence how many of the dollars may be spent in smaller schools. Equal expenditures, when considered independently, would not be reflective of the educational opportunities provided children. However, when evaluated along with size and efficiency it becomes more important. Therefore, the Commission recommends:

> That the *Basic Aid Fund* be allocated to each local administrative unit on the basis of a comprehensive programmatic method of funding based on program costs rather than line-item allocations.

Conclusions

The research reported in this chapter was conducted to identify the breadth and depth of educational programs in the state of North Carolina. School offerings were analyzed in relation to wealth, size, and school location. Variables such as core offerings and pupil/teacher ratio were also studied. After examining the data, several results were identified.

Perhaps the most apparent, yet least surprising, conclusion was that school size is significantly related to the number of different course offerings. This was apparent whether identified through regional data or state level data and is consistent with research findings in other states. Small schools often do not have a demand in significant magnitude to offer German, Latin, drama, or other such supplementary offerings. However, not only were enrichment areas more plentiful in larger schools, but also core courses in English, math, science, and social studies. Size of schools did not make a difference in core requirements or in total requirements for graduation, but it did influence the total number of alternatives provided.

The most pronounced variations among schools seemed to be in foreign language, cultural arts, and vocational programs. This was true even between schools with the same organizational pattern (9-12, 8-12, or K-12, etc.), of similar size, and in the same geographic region. Local priorities may influence to a significant degree the comprehensiveness of course offerings in any of the various disciplines.

Wealth, whether measured by total assessed value, total assessed value per ADM, or personal income, appeared related to the extent of course offerings in foreign languages, cultural arts, and exceptional programs. Effort, however, demonstrated only partial relationships. The ability of the district, rather than the tax effort, appeared as a primary determinant, along with size, in providing a diversified comprehensive program.

Regional data revealed that one-grade Mountain schools provided fewer course alternatives than those in the Piedmont or Coastal areas, while such schools in the Piedmont region provided the greatest number, particularly in foreign languages. However, in three- and four-grade Mountain schools the greatest variety could be found in large or medium size schools. The Coastal area offered the broadest program for small schools. These data indicate that the variety of courses which are available to school children in North Carolina may be dependent upon the region of the state in which they live. Not only would the region be influential, but also the county, the district, and indeed the school.

References

Bolin, J. C. *A Study of Selected Factors Characteristic of Staffing Conditions in the Public Schools of Alabama*. Unpublished Ed.D. Dissertation, Auburn University, 1963.

Bowles, S. S. "Toward an Educational Production Function." *Education, Income, and Human Capital*. W. Lee Hansen (Ed.). New York: National Bureau of Economic Research, 1970, pp. 11-61.

Brunvold, P. O. *The Relationship Between Selected School District Variables and Teacher Assignment Based on Preparation*. Unpublished Ph.D. Dissertation, University of Iowa, 1965.

Burkhead, J., Fox, T. G., and Holland, J. W. *Input and Output in Large City High Schools*. Syracuse: Syracuse University Press, 1967.

Coleman, J. S. *Equality of Educational Opportunity*. Washington, D. C.: U. S. Government Printing Office, 1966.

Collinsworth, J. B. *An Analysis of the Relationship of Size of Arkansas High Schools to Selected Characteristics of High School Teaching Personnel*. Unpublished Ph.D. Dissertation, University of Arkansas, 1961.

Davis, E. D. *A Study of Objective Differences Existing in Selected Small and Large Union Schools in North Carolina*. Unpublished Ph.D. Dissertation, University of North Carolina, 1958.

Department of Public Instruction, Division of Teacher Education. *Teacher Supply and Demand in North Carolina, 1975-76 and 1976-77*. Raleigh, N. C.: Department of Public Instruction, March, 1977, p. 37.

Department of Public Education, Office of the Controller. *State Appropriations — State Aid*. Raleigh, N. C.: Department of Public Education, no date, p. 7.

Engles, R. A., and Galambos, E. V. *Supply and Demand Balances of Selected College-Level Fields Projected for SREB States*. Atlanta, Ga.: Southern Region Education Board, 1975, pp. 26-29.

Great Plains School District Organization Project. *Guidelines for School District Organization*. Lincoln, Nebraska: State Department of Education, 1968.

Hanushek, E. A. *The Education of Blacks and Whites*. Unpublished Ph.D. Dissertation, Massachusetts Institute of Technology, 1968.

Hill, R. N. *An Analytical Survey of Curricular Changes in Minnesota Senior High Schools, 1951-1962*. Unpublished Ph.D. Dissertation, University of Minnesota, 1963.

Jackson, J. L. *School Size and Program Quality in Southern High Schools*. Nashville, Tenn.: Center for Southern Education Studies, George Peabody College for Teachers, 1966.

Katzman, M. T. "Distribution and Production in a Big City Elementary School System." *Yale Economic Essays*, Spring 1968, pp. 201-256.

Kiesling, H. J. *The Relationship of School Inputs to Public School Performance In New York State*. Prepared for RAND Corporation, 1969.

Kolze, R. G. *An Analysis of the Program of Studies as Related to Selected Factors of Indiana North Central Association Schools*. Unpublished Ed.D. Dissertation, Indiana University, 1968.

Kowitz, G. T., and Sayers, W. C. *Cost and Educational Opportunity in Secondary Schools*. Albany, New York: State Department of Education, 1959.

Levin, H. M. "A New Model of School Effectiveness." *Do Teachers Make a Difference*, pp. 55-78. Washington, D. C.: U. S. Department of Health, Education, and Welfare, 1970.

Lile, S. E. *Family Tax Burdens Compared Among States and Among Cities Located Within Kentucky and Neighboring States*. Frankfort, Ky.: Kentucky Department of Revenue, 1975, pp. 46-47.

Maxley, E. J., and Thomas, D. R. "Selected Comparisons of Teacher and Curriculum Characteristics Related to Educational Innovation for the Great Plains." *Planning for School District Organization-Selected Position Papers*. Lincoln, Nebraska: Great Plains School District Organization Project, 1968, pp. 88-89.

McLure, W. *Education for the Future of Illinois*. Springfield: Springfield School Problems Commission, 1966.

McLure, W. P. "Financing Equality of Educational Opportunity — A Reassessment." *Futures in School Finance: Working Toward a Common Goal*. K. Alexander and K. F. Jordan (Eds.). Bloomington, Indiana: Phi Delta Kappa, 1975, pp. 102-103.

McPhail, G. D. *School District Size and Per Pupil Expenditure*. Unpublished Ph.D. Dissertation, University of Oklahoma, 1966.

Moeller, G. E. *A Comprehensive Study of the Problems of Beginning Teachers in Selected Large Senior High Schools*. Unpublished Ed.D. Dissertation, University of Nebraska Teachers College, 1968.

Morris, H. J. *Relationship of School Size to Per Pupil Expenditure in Secondary Schools of Nine Southern States*. Unpublished Ed.D. Dissertation, George Peabody College for Teachers, 1964.

National Center for Education Statistics. *Projection of Education Statistics to 1985-86*. Washington, D. C.: U. S. Government Printing Office, 1977, p. 13, 48.

National Education Association. *Teacher Supply and Demand in Public Schools, 1974, 1975, 1976 with Population Trends and Their Implication for Schools, 1976-77*. Washington, D. C.: NEA, 1977, p. 12.

Ostendorf, L. C. and Horne, P. J. *Course Offerings, Enrollment, and Curriculum Practices in Public Secondary Schools, 1972-73*. Washington, D. C., National Center for Educational Statistics, 1976.

Ottey, W. L. *Size, Cost, and Educational Opportunities in Selected Pennsylvania School Districts*. Unpublished Ph.D. Dissertation, University of Pennsylvania, 1971.

Oviatt, S. W. *A Study of the Optimum Size of the High School*. Unpublished Ed.D. Dissertation, Michigan State University, 1966.

Padilla, A. *The Teaching Market in North Carolina*. Chapel Hill, N. C.: The University of North Carolina, General Administration, August, 1977, pp. 11; 28-34. (Unpublished manuscript).

Patterson, H. D. *Relationship Between Size of Secondary School and Selected Teacher Characteristics*. Unpublished Ed.D. Dissertation, George Peabody College for Teachers, 1964.

Projections of Teacher Supply and Demand to 1980-81 (Commissioner's Report on the Education Professions 1974-75). Washington, D. C.: U. S. Government Printing Office, 1977, p. 2, 12.

Sales and Marketing Management (1977 Survey of Buying Power), July 25, 1977, pp. C-57; C-87; C-153; C-182, C-188; C-210.

Sparkman, W. E. *Equity of Taxation* (A Component of the Arkansas School Finance Study). Manhattan, Kansas: Kansas State University, December, 1977, Appendix 2; Appendix 3; Appendix 6. (Unpublished manuscript).

Summers, A. A., and Wolfe, B. L. "Which School Resources Help Learning? Efficiency and Equity in Philadelphia Public Schools." *Federal Reserve Bank of Philadelphia Business Review*, February, 1975.

Tax Foundations. *Monthly Tax Features*. New York: Tax Foundations, December, 1977, p. 1.

Thomas, J. A. *Efficiency in Education: A Study of the Relationship Between Selected Inputs and Mean Test Scores in a Sample of Senior High Schools*. Unpublished Ph.D. Dissertation, Stanford University, 1962.

Thomas, J. A. *School Finance and Educational Opportunity in Michigan*. Lansing, Michigan: Michigan Department of Education, 1968.

U. S. Department of Commerce. *Survey of Current Business*. Washington, D. C.: U. S. Government Printing Office, August, 1977, p. 17.

U. S. Government Printing Office, *Digest of Education Statistics, 1976*. Washington, D. C., 1977.

U. S. Government Printing Office. *Handbook of Labor Statistics 1977*. Washington, D. C., 1977, p. 241.

University of North Carolina, General Administration. *The Education and Training of Teachers and Other Educational Personnel in the University of North Carolina* (Report 3). Chapel Hill, N. C.: University of North Carolina, 1977, pp. 15-16.

Weaver, C. H. *An Investigation of the Influence of Size on the Quality of the High School*. Unpublished Ph.D. Dissertation, University of North Carolina, 1961.

Chapter 4

Costs of Educational Programs

One purpose of this study was to determine the cost relationship among the various educational programs in school districts in North Carolina. Determination of this relationship should assist policy makers in their efforts to meet the needs of students through improved funding methods. This chapter presents the calculation of average costs, added costs, and cost indices for each program area with conclusions and implications.

An advantage of the weighted pupil system based on program cost indices is that school districts have the opportunity to identify and utilize more flexible and efficient program structures rather than relying upon institutionalized ones. In other words, weighting systems allow local districts the opportunity to create educational programs and services that will meet the unique needs of their pupils without penalizing them for the necessarily high costs incurred in operating such programs. The weighted pupil cost index allows a state to legislate alternative funding means rather than to rely on rigid funding patterns that may perpetuate local financial inequities.

Pupil weighting systems, despite the technical difficulties involved in determining the appropriate weights, attempt to equalize educational resources based on varying student needs. The distribution of students with exceptional needs requiring special programs at additional costs is not spread uniformly across local districts in any given state. Since some local districts will have higher concentrations of pupils with special needs, school financing programs should make some allowance for these differences.

Although the use of cost indices to allocate funds among local districts has certain limitations, the use of cost indices for statewide planning purposes is particularly helpful. When compared with other alternatives, pupil weighting systems and the development of accurate cost indices indicate much more accurately the amount of revenue needed to provide adequately for the special needs of all pupils. A few states have fully implemented pupil weighting systems; however, considerable research is needed on an individual state basis in order to develop and cost out programs designed to meet the varying needs of different groups of pupils.

Program Costs, Added Costs, And Cost Indices

Adequate and reliable data are necessary if successful and equitable state educational finance policies are to be developed. To assure a reliable data base for North Carolina, financial data on program costs, added costs, and cost indices were collected for each of the following programs in samples of local administrative units. The samples are described in the Appendices of this report.

Basic Programs and Compensatory Program

- Kindergarten
- Grades 1 - 3
- Grades 4 - 8
- Grades 9 - 12
- Compensatory (Title I)

Vocational Education Programs

- Agriculture
- Business and Office
- Distributive
- Health
- Home Economics
- Trade and Industrial

Exceptional Programs

- Educable Mentally Retarded
- Trainable Mentally Retarded
- Hearing Impaired
- Speech Impaired
- Visually Impaired
- Emotionally Handicapped
- Orthopedically Impaired
- Hospitalized/Homebound
- Learning Disabled
- Gifted and Talented

The following sections of this report provide the results of the research on costs for the above types of programs. A discussion follows of the population and sampling procedures used; data collection and analysis procedures; report of each program's cost, added cost and cost index; and some observations about the nature of the data found in each sample.

Sample

Data for the cost analysis of the three program areas (basic and compensatory, vocational, and exceptional) were collected from 28 local districts in North Carolina for the year 1976-77. The sample districts (see Appendices) were selected to ensure geographical and school size representation, as well as comprehensiveness of program. Each of the three program areas was represented by a sample of ten school districts. Because two of the units selected were included in two different groups — exceptional programs and basic programs — the final number of sample units on which data were collected was 28.

Data Collection and Analysis Procedures

The purpose of this research was to derive program costs, added costs, and cost indices for each of the programs identified earlier. The accepted procedure to achieve this end is to identify and attribute all of those costs associated with an educational program and calculate the total program cost. Two steps in this process include attributing direct and indirect costs to programs. Direct program costs are those that can be directly and logically associated with a given program. Generally, they are those instructional costs that involve working directly with pupils. For example, all teacher salaries and benefits were attributed directly to a specific program.

Other direct attribution to programs included exceptional program supplies (if specified in the local district budget) across all exceptional programs, psychological services across all exceptional programs, other special and extraordinary expenditures across all exceptional programs, other occupational educational program costs across all vocational programs, and other kindergarten expenditures to kindergarten programs.

All other costs that could not be reasonably attributed to a given program or group of programs were considered indirect costs. General control costs (district central office) and the balance of fixed charges (fringe benefits) not directly attributed to a program were distributed to each program on the basis of full-time equivalent (FTE) teachers in each program. Other instructional services such as building administration, coordination, supervision, guidance, library, and clerical salaries were distributed across all programs according to the number of FTE pupils in each program. Operation of plant, maintenance of plant, and nonattributable auxiliary service costs were treated likewise. Only expenditures for transportation, food service, capital outlay, and debt service were not included in either the direct or indirect cost attribution, as these expenditures tend to be cyclical and cannot be associated with a given program or group of programs. They represent separate programs that must be analyzed independently.

The Division of Management Information Systems in North Carolina's Department of Public Education provided two computer printouts that enabled the identification of data on teacher salaries, teacher FTEs and pupil FTEs by program. The first printout was a list of instructional staff, their monthly salaries, and their term of employment by local administrative district and building. The second was a list of instructional staff, the classes they taught, minutes per class, and class enrollment. A match was made between these two printouts for each staff member; subsequently, salaries, benefits, and FTEs could be computed for each class and, in turn, each educational program. When no match could be made — that is, when a staff member appeared on one printout and not the other — those persons and costs were not included in the program totals. (Since there was no way of attributing these data to programs in a reasonable manner, such costs were not included in the final

Table 4-1
Summary of Basic and Compensatory Program Costs and Cost Indices in North Carolina 1976-77

Program	FTE Students in Sample	Range in Unit Cost per Pupil	Median Unit Cost per Pupil	Average Unit Cost per Pupil	Weighted Average Cost per Pupil	Added[1] Cost per Pupil	Cost Index
Kindergarten	6,687.1	$ 707-1,109	$ 922	$ 925	$ 910	$ 39	1.04
Grades 1-3	22,045.0	755-1,072	902	912	897	26	1.03
Grades 4-8	38,573.3	651-1,034	857	856	871	0	1.0
Grades 9-12	27,156.5	793-1,156	965	970	979	108	1.12
Compensatory (Title I)	1,013.1	1,742-4,052	2,397	2,625	2,637	1,766	3.03

[1]Added cost per pupil is the amount the weighted average cost per pupil exceeds the weighted average base program (grades 4-8) of $871 per pupil.

Source: Data for table were obtained from the *Annual Financial Report of the North Carolina Public School System.*

computations.) The missing data are likely to result in a slight understatement of program costs, but the assumption is that the missing data are distributed randomly across programs and comprise less than 2 percent of all data on costs and FTEs.

Basic Programs and Compensatory Program Costs

A sample of ten school districts was used to provide cost data on kindergarten, grades 1 through 3, grades 4 through 8, grades 9 through 12, and compensatory (Title I) programs. A summary of these program costs based on data obtained from the Annual Financial Report of the Public School System of North Carolina is represented in Table 4-1. Each of the column headings in Table 4-1 is defined as follows.

FTE Students in Sample — The number included all full-time equivalent pupils in each program in all ten local districts. A full-time equivalent student is a student who, if the normal school year is 180 days and five periods per day, attends classes five periods a day for 180 days. Any student schedule less than the norm would result in the computation of less than one FTE.

Range of Local Administrative Unit Cost per Pupil — Each unit's program cost was calculated, and this column shows the lowest unit to the highest unit cost per pupil for the program identified in the left column.

Median Local Administrative Unit Cost per Pupil — This cost represents the mid-point of all local administrative unit costs per pupil for each program. For example, if there are ten local units, the

median local unit cost per pupil would be halfway between the fifth- and sixth-ranked local units' costs.

Average Local Administrative Unit Cost per Pupil — The total of all local unit program costs *per pupil* was divided by the number of programs sampled. Ten programs were sampled for each program category shown in Table 4-1.

Weighted Average Cost per Pupil — The total of all local unit program costs was divided by the total number of FTE students in the total sample. This allows each student to contribute equally to the average cost and is a more representative average of the student population.

Added Cost per Pupil — Added cost per pupil is the amount each program's weighted average cost exceeded the weighted average base program (grades 4-8) cost. This research used the weighted average grades 4 through 8 program cost as the base cost, which was $871 per pupil.

Cost Index — The program cost index was calculated by dividing the weighted average program cost per pupil by the weighted average basic program (grades 4-8) cost. For example, the weighted average kindergarten program cost was $910 per pupil and was divided by $871 per pupil (grades 4-8) to obtain a cost index of 1.04. This is interpreted to mean that, on the average, the cost to educate a kindergarten pupil in the sample of local units was about 1.04 times as much as it was to educate a pupil in grades 4 through 8 during 1976-77.

The costs in Table 4-1 reveal that the weighted average cost per pupil ranged from $871 for grades 4 through 8 to $2,637 for the compensatory program. The cost indices, likewise, reflect these costs and range from 1.00 for the grades 4 through 8 to 3.03 for the compensatory program.

Although program costs in a given program may be higher than those in another program for various reasons, the primary cause for cost differences has been found to be a lower pupil to instructional staff ratio. In this sample of North Carolina local administrative units there may be some exceptions. One exception might be that kindergarten programs all had at least one teacher aide per classroom which added significantly to the program cost. On the other hand, average kindergarten teacher salaries and benefits tended to be lower than for other programs. It is assumed that this is because of the recent establishment of the kindergarten program in the state. It can be expected that, as these teachers gain more experience and move higher on the salary schedule, their average teacher cost will be higher and thus the kindergarten program cost index, relative to other indices, is likely to increase more in the future.

The slightly higher costs for grades 1 through 3 programs compared to grades 4 through 8 programs may be attributed to somewhat lower pupil/staff ratios including the special assistance given these pupils for improving basic skills — reading and mathematics. Grades 9 through 12 program costs are higher than grades 4 through 8 costs essentially because of the lower pupil/staff ratio, particularly when counseling personnel are attributed to grades 9 through 12 programs.

The differences in program costs and cost indices found in North Carolina between kindergarten, grades 1 through 3, grades 4 through 8, and grades 9 through 12 were somewhat lower than those found in other studies. These lower cost differentials and cost indices for programs can be attributed to the fact that North Carolina has a state salary schedule for teachers and allocates teaching positions and reimburses local units on the basis of standard classroom membership. If, for example, the standard class membership is 28 pupils for kindergarten through grade 12, then each local unit will employ a teacher for each 28 pupils in ADM and will receive reimbursement from the state. The reimbursement for the costs of state-allocated teachers to local units is based on the state salary schedule levels. This statewide standard of allocating teacher units and the existence of a statewide teacher salary schedule tends to equalize program costs across local administrative units and programs.

Compensatory (Title I) program costs were much

higher than for any other programs in this group. This high-cost federal program is very individualized in that teachers in the program spend brief amounts of time with individual students on a one-to-one basis or in small groups. It was found that Title I teachers averaged about 20 to 40 minutes per day with each disadvantaged student in either reading or math or both. In addition, each program area had several teacher aides working with students. Whenever the pupil/teacher ratio is reduced significantly, as in the case of these compensatory programs, it significantly increases the program cost per pupil.

Exceptional Program Costs

Average costs, added costs and cost indices were computed for each of ten different exceptional program areas identified above. Again, ten local administrative units comprised the sample from which the data were gathered. Only the educable mentally retarded, speech impaired, and learning disabled programs were offered in all ten units; several local units did not provide exceptional programs for all areas of exceptionality. Several local unit spokesmen explained to the researchers that, although they had identified and reported some students with an exceptional characteristic, these students were mainstreamed into the regular program and no program was offered for their exceptionality.

Table 4-2 shows that orthopedic programs and visual programs were offered in only three and one unit(s), respectively. Program cost data based on this small number of programs cannot be used for making finance policy decisions. The other programs are represented adequately, and it is possible to derive policy implications based on the data for these programs.

Program costs for exceptional children ranged from $918 per pupil in the gifted and talented program to $2,963 per pupil for the hospitalized/homebound program; cost indices ranged, respectively, from 1.05 to 3.40. Those programs which were high-cost with high-cost indices were programs with low pupil/staff ratios. Teacher aides were used extensively in those exceptional programs with high costs per pupil, particularly in trainable mentally retarded, emotionally handicapped, and orthopedically impaired programs. The low cost for the gifted and talented program indicates that classes for these students characteristically are at or slightly below average size.

The advent of mainstreaming evidently has not and may not cause exceptional children program costs to decline. In a smaller local administrative unit there is need, for example, for a teacher for educable mentally retarded students whether there are 15 EMR students or five EMR students in the unit, or whether the EMR students are all in regular classes 50 percent of the time or in a self-contained EMR classroom 100 percent of the time. Mainstreaming may result in continued or increased use of a resource room and/or itinerant teachers, which also tend to be high-cost programs because of low pupil/staff ratios. In programs where the student/staff interaction is either very individualized or on a small group basis, the FTE student count will be lower and the cost per FTE student will be higher.

Vocational Program Costs

Vocational program costs were collected on six different programs in a representative sample consisting of ten local administrative units. Instructional salaries and benefits were allocated directly to each program. "Other occupational costs" identified on local unit expenditure reports were also allocated indirectly across all vocational programs in a local unit on an FTE student basis. All other costs were allocated indirectly across all local unit programs on the basis of either FTE teachers or FTE students.

Table 4-3 shows a summary of the program costs, added costs, and cost indices for the six vocational programs. Only the agriculture and health education programs were not offered in all ten districts.

Table 4-2

Summary of Exceptional Children Program Costs and Cost Indices in North Carolina 1976-1977

Exceptional Program	FTE Students in Sample	Total Number of Programs	Range in Unit Cost per Pupil	Median Unit Cost per Pupil	Average Unit Cost per Pupil	Wtd. Avg. Cost per Pupil	Added[1] Cost per Pupil	Cost Index
Educable Mentally Retarded	2,362.2	10	$1,385 - 2,311	$1,558	$1,636	$1,528	$ 657	1.75
Trainable Mentally Retarded	569.9	9	1,559 - 2,759	1,704	1,955	1,960	1,098	2.26
Hearing Impaired	76.0	6	1,722 - 4,024	2,561	2,601	2,542	1,671	2.92
Speech Impaired	344.3	10	1,110 - 6,168	2,508	2,919	2,062	1,191	2.37
Visually Impaired	10.0	1	1,913	1,913	1,913	1,913	1,042	2.20
Emotionally Handicapped	75.5	6	1,515 - 4,386	2,628	2,854	2,893	2,022	3.32
Orthopedically Impaired	62.3	3	1,771 - 2,763	2,344	2,293	2,163	1,292	2.48
Hospitalized/ Homebound	69.2	7	1,874 - 7,079	3,361	3,815	2,962	2,091	3.40
Learning Disabled	809.7	10	1,223 - 2,221	1,812	1,769	1,681	810	1.93
Gifted and Talented	1,005.0	8	674 - 1,636	1,071	1,067	918	47	1.05

[1]Added cost per pupil is the amount the weighted average cost per pupil exceeds the weighed average base program (grades 4-8) cost of $871 per pupil.

Source: Data for table were obtained from *Annual Financial Report of the North Carolina Public School System.*

The derivation of the data presented in Table 4-3 under each heading was explained in the section on basic program costs.

The variance shown for program costs and cost indices in Table 4-3 is small. The range extends from a weighted average cost per pupil of $1,103 and a cost index of 1.27 for the distributive education program to $1,391 and a cost index of 1.60 for the agriculture program. The health education program also was a higher cost program with a weighted cost of $1,381 and a cost index of 1.59.

Vocational program costs in North Carolina local administrative units show three factors which contribute to their added costs. One was the slightly lower than normal pupil/teacher ratios compared with basic programs. The second was that vocational teachers were either paid slightly more on a monthly basis due to training and experience or,

Table 4-3

Summary of Vocational Education Program Costs and Costs Indices in North Carolina 1976-1977

Vocational Program	FTE Students in Sample	Total Number of Programs	Range in Local Unit Cost per Pupil	Median Local Unit Cost per Pupil	Average Local Unit Cost per Pupil	Weighted Average Cost per Pupil	Added[1] Cost per Pupil	Cost Index
Agriculture	711.7	6	$1,129 - 1,784	$1,420	$1,418	$1,391	$320	1.60
Distributive Education	482.9	10	838 - 1,480	1,052	1,123	1,103	232	1.27
Health	89.4	5	1,233 - 1,417	1,303	1,330	1,381	510	1.59
Home Economics	1,702.6	10	1,038 - 1,764	1,223	1,299	1,307	336	1.39
Business & Office	297.1	10	1,102 - 2,028	1,377	1,406	1,319	448	1.51
Trades & Industry	1,744.3	10	912 - 1,827	1,299	1,301	1,242	371	1.43

[1]Added cost per pupil is the amount the weighted average cost per pupil exceeds the weighted average base program (grades 4-8) cost of $871 per pupil.

Source: Data for tables were obtained from the *Annual Financial Report of the North Carolina Public School System.*

more importantly, tended to receive extended contracts beyond ten months. Thus, average vocational teacher salaries tended to be slightly higher than average salaries in other programs. Finally, the "other occupational expenditures" category on local administrative unit state budget reports showed extensive expenditures for some local units. These three factors contributed to the added costs of vocational programs in the state.

Comparison of Cost Indices

Table 4-4 shows the cost indices found in the study of program costs in North Carolina, cost indices found in studies of West Virginia and Arkansas programs, and a range in the cost indices found in studies of programs across the United States. The methodologies used in these studies were not identical, and the pupil unit used in measuring cost was not the same for all studies. For example, some studies used average daily membership, some used average daily attendance, and others used full-time equivalent students (the measure used by the researcher in this chapter of the North Carolina study).

The cost indices found in other studies, as compared with those found in North Carolina, allow observers to determine whether the state's cost indices are in the approximate ranges of other states'

Table 4-4

Comparison of Cost Indices Found in North Carolina with Other State Cost Indices

Program	North Carolina	Arkansas	West Virginia	Range in Other States
Kindergarten	1.04	1.16	1.38	1.03 — 1.30
Grades 1-3	1.06	1.00 1-6	1.00 1-6	1.00 — 1.30
Grades 4-8	1.00	1.22 7-12	1.14 7-12	1.00 Base Program
Grades 9-12	1.12	1.22 7-12	1.14 7-12	1.10 — 1.50
Compensatory	3.06	1.09	N.A.	1.60 — 2.40
Educable Mentally Retarded	1.75	2.66	1.96	1.50 — 2.88
Trainable Mentally Retarded	2.26	2.77	2.19	1.60 — 3.00
Hearing Impaired	2.92	5.86	8.28	1.55 — 3.71
Speech Impaired	2.37	10.23	9.82	1.18 — 5.97
Visually Impaired	2.20	N.A.	7.04	1.16 — 6.01
Emotionally Handicapped	3.32	3.18	2.76	1.60 — 3.95
Orthopedically Impaired	2.48	3.27	2.96	1.65 — 4.18
Hospitalized/ Homebound	3.40	6.66	8.62	1.22 — 2.60
Learning Disabled	1.96	2.66	2.33	1.32 — 2.76
Gifted & Talented	1.05	N.A.	N.A.	N.A.
Agriculture	1.60	1.19	1.40	1.29 — 2.60
Distributive Ed.	1.27	0.97	1.12	1.29 — 1.50
Health	1.59	1.57	1.82	1.29 — 2.70
Home Economics	1.39	1.20	1.47	1.29 — 1.70
Business & Office	1.51	1.15	1.39	1.29 — 1.80
Trades & Industry	1.43	1.42	1.28	1.28 — 2.90

[1]N.A. — Not Available

Source: Data for table furnished by L. Probasco, Consultant to the Governor's Commission on Public School Finance, 1978.

educational costs or to reflect on why they might be substantially different. Only two program cost indices were found to be above the range found in other states. The compensatory program cost index was 3.03 in North Carolina, whereas other states showed a range of 1.60 to 2.40. There is considerable confidence in the 3.03 compensatory program cost index, as the cost and student/teacher contact time data for this program appeared to be as accurate as for any programs in the study. The hospitalized/homebound program cost index of 3.40 is higher than those typically found in other studies. Again, this index appears accurate since it is based on seven local administrative unit programs and 69.2 FTE students. In addition, the program was found to be a highly individualized program which added appreciably to the cost.

The other cost indices in North Carolina were found to be within a reasonable range of those found in other states. The comparisons of the cost indices with those found in other states show why it is important that a state conduct its own study of educational program costs and not rely on either national studies or studies completed in other states. To base state educational finance policies and legislation on indices found in other states could cause considerable inequity in the distribution of state educational aid. On the other hand, to ignore the fact that some educational programs cost more than other programs would also result in financial aid inequities.

Conclusions

Some general conclusions and implications which need to be considered in the formulation of educational finance policies and potential legislation are set forth. These conclusions and implications are based on findings regarding program costs.

Program Costs — Basic Programs

The low added costs and small differences in cost indices between the kindergarten (cost index 1.04), grades 1 through 3 (cost index 1.03), grades 4 through 8 (cost index 1.00), and grades 9 though 12 (cost index 1.12) are probably a function of the standardized state teacher allocation system and statewide salary schedule in North Carolina. However, there are program cost differences in regular programs among local units. The most notable cost difference is between the secondary (9-12) program and the base program, with the former costing about 12 percent more than the latter. Kindergarten program costs may increase relative to other regular programs because of the comparatively new kindergarten program with teacher aides.

Program Costs — Compensatory Program

Compensatory program costs are financed almost exclusively by the federal government (Title I), and the state may have to face the question of whether to continue to finance such a program if federal support either decreases or ceases. It is evident that it costs about three times as much per student to finance a compensatory program as it does a basic program.

Program Costs — Exceptional Children Programs

1. The cost indices for exceptional children programs ranged from 1.05 for the gifted and talented program to 3.40 for the hospitalized/ homebound program in North Carolina. The hospitalized/homebound (cost index 3.40), emotionally handicapped (cost index 3.32), hearing impaired (cost index 2.92), orthopedic (cost index 2.48) and trainable mentally retarded (cost index 2.26) programs are the more costly. Cost data from the visually impaired and orthopedic programs were based on a small number of students and local programs

and, therefore, may not be as reliable for projection purposes as the other program indices.

2. Given the reasonably reliable data gathered on eight of the ten exceptional programs, the state may consider finance policies and/or legislation which would help local administrative units offset the added costs of these programs that must be financed locally. In other studies incidence of exceptionality and, thus, impact on local tax burden, has not been found to be distributed evenly across local units. Uneven distribution of exceptional students is likely to be the situation in North Carolina. Therefore, to make allowance for the uneven distribution of exceptional needs across programs and across local administrative units, some form of weighted pupil, weighted classroom, or weighted teacher state aid formula should be adopted.

Program Costs — Vocational Programs

Vocational program cost indices ranged from 1.27 for the distributive education program to 1.60 for the agriculture program. Local administrative units need assistance in financing the added costs of vocational programs, and the state should consider the magnitude of and make allowances for the additional costs of vocational programs through a form of weighted state support formula. As vocational program costs do not vary significantly across programs, a statewide average cost index for all vocational programs might be implemented similar to a few other states.

Weighted Pupil Formula — Implication

If a weighted pupil state finance formula were adopted on the basis of these reported cost indices, it would be necessary for the state to organize procedures for reestablishing and/or verifying indices on a regular basis. Cost indices should not be viewed as fixed and unalterable, as it is likely that program costs and needs will change over the years. Therefore, the Commission recommends:

> That the *Basic Aid Fund* be allocated through the use of a weighted classroom instructional unit. Cost differentials for weighted program units should be evaluated annually.

Chapter 5

Alternative Measures of Local Fiscal Capacity

The definition and measurement of local fiscal capacity is an old and elusive problem in public school finance. Fiscal capacity is a quantitative measure of economic resources available to a governmental unit for the support of public functions and is generally expressed as a ratio of available resources per unit of need. Numerous studies have documented the existence of wide variations in the capacity of local school districts to support public education (Cubberley, 1906; Johns, 1952; Rossmiller, Hale and Frohreich, 1970; Strayer and Haig, 1923). Given that the financing of the public schools is primarily a state responsibility, the presence of significant disparities in local fiscal capacity necessitates the development and maintenance of state school finance programs.

The central role of the state in facilitating the attainment of equality of educational opportunity and taxpayer equity has been recognized in the field of public school finance. In 1906 Cubberley examined the fiscal characteristics of school districts in six states, concluding that the magnitude of disparities in local fiscal capacity was such that "any attempt at the equalization of the opportunities for education, much less any attempt at equalizing burdens, is clearly impossible under a system of exclusively local taxation" (p. 54). Strayer and Haig, in a 1923 New York study, stated that strict interpretation of the concepts of equalization of educational opportunity and equalization of school support would imply that:

> The state should ensure equal educational facilities to every child within its borders at a uniform effort throughout the state in terms of the burden of taxation; the tax burden of education should throughout the state be uniform in relation to tax-paying ability, and the provision for schools should be uniform in relation to the educable population desiring education. (p. 173)

It was noted that most individuals would insist upon the provision of at least a minimum education program in all school districts but would not preclude individual districts from going beyond that minimum at their own expense. Strayer and Haig recommended that application be made of the concepts of equalization of educational opportunity and equalization of school support by (a) furnishing children in each school district within the state with equal educational opportunities up to a prescribed minimum, and (b) raising the funds necessary for this purpose through state and local taxation adjusted so as to bear upon the taxpayers in all districts at the same rate in relation to their fiscal capacity.

During the past five decades, substantial progress has been made in refining, adjusting, and extending the principles of school finance equity suggested by Cubberley and Strayer and Haig. Various alternative state school finance models have been developed, including the traditional foundation system, equalized local initiative systems, full state funding, and the foundation system supplemented with equalized local initiative. Despite the diversity of the alternatives, most systems involving shared state and local financing of the public schools are based upon fiscal equalization formulas in which the state allocation to the district varies directly with educational need and inversely with local fiscal capacity.

In 1975-76, forty-six states employed some type of equalization formula; on the average, 68 percent of state school funds were distributed through this approach (Tron, 1976). With the recent enactment of state equalization programs in Connecticut and South Carolina, North Carolina is now the only state in the nation with neither full state funding nor a fiscal equalization program. The development of sound public policy with regard to equality of educational opportunity and taxpayer equity in states with fiscal equalization programs depends in large measure on the definition and measurement of local fiscal capacity. Despite the central position of fiscal capacity in school finance, no consensus has been reached on the appropriateness of alternative measures of this concept.

Measurement of Fiscal Capacity

Two basic approaches have been used in measuring the fiscal capacity of states and local areas (Advisory Commission on Intergovernmental Relations, 1962). One approach defines capacity in terms of economic indicators such as income, wealth, and consumption. The second approach defines capacity in terms of the tax bases available to a governmental unit and the amount of revenues these bases would produce at various levels of taxation. To the extent that the economic indicators used in measuring capacity under the first approach correspond to the tax bases actually available to the governmental unit, the two approaches merge into one another. However, if the governmental unit is unable to tax the bases included under the first approach, the tax base and economic indicator approaches may yield substantially different results.

The economic indicator approach takes the position that the fiscal capacity of a governmental unit is a function of economic characteristics and is not dependent upon the availability of various tax bases to the unit. Supporters of this approach suggest that since all taxes must be paid from income or accumulated wealth, fiscal capacity is determined by these factors irrespective of the system of taxation actually in use (Clune, 1973). Since the same taxpayers pay local, state, and federal taxes, the local fiscal capacity of a geographic area is viewed as identical to its state or federal fiscal capacity, and the same measures of local capacity are viewed as appropriate for all levels of analysis.

The tax base approach, in contrast, takes the position that the fiscal capacity of a governmental unit is a function of the tax bases available to the unit and the yield of these bases at legally permissible rates of taxation. Supporters of this approach reason that sources of wealth which are not subject to taxation by the unit should not be included in measuring the unit's fiscal capacity (Burke, 1957; Johns and Morphet, 1975; Mort, 1933). Furthermore, it is held that the capacity of a geographic region for the support of local functions may differ from its capacity to support state or federal functions because local units may not be able to tax all aspects of the region's wealth. While measures of theoretical ability to pay under an ideal tax system may be appropriate for comparing the fiscal capacities of states, they are inappropriate for comparing the fiscal capacities of localities that are legally unable to tap major wealth bases.

The economic indicator approach has been widely employed in estimating the relative fiscal capacity of state governments; however, the tax base approach has been the standard method for measuring local school district fiscal capacity since the 1920s. In 1978 all 48 states with school finance equalization programs employed property valuation as a major element in determining local fiscal capacity. Thirty-six states used property valuation per pupil as the basic indicator of local fiscal capacity; two states used economic indices in their equalization formulas. Six states included major nonproperty revenues of local governments as well as property valuations; and four states made adjustments to property reflecting economic indicators not directly related to tax bases accessible to local governments.

The economic index method developed by Cornell (1936) was the earliest widely-recognized alternative to the use of property valuations for the measurement of local fiscal capacity. He demonstrated that the equalized property valuations of local governmental units could be predicted through regression equations including such factors as population, retail sales, motor vehicle registrations, gross production, number of individual income tax returns, and postal receipts. Mort and Reusser (1941) suggested that the economic index could be used to assist state equalization boards in identifying discrepancies in valuation practices or as an alternative means of estimating equalized property valuations. Following a study by Johns (1938) the state of Alabama adopted an economic index measure of local fiscal capacity. In 1957 Burke reported that economic indices were used for the apportionment of state school equalization

funds in Alabama, Arkansas, Florida, Georgia, Mississippi, and Texas, and that West Virginia had employed such an index from 1948 until 1953.

Since the purpose of the economic index method is to approximate the equalized valuation of property in the absence of accurate assessment data, this approach has been recommended only when adequate appraisals of the true value of property are not available for all of the districts in a state. As states have established agencies charged with completing property appraisals and sales-ratio studies, the requirement for the economic index approach has declined. In 1978 economic indices were employed in the apportionment of school equalization funds in two states, Alabama and Mississippi.

The property valuation per pupil measure of local fiscal capacity received few major criticisms until the early 1960s. Since that time, critics have questioned both the validity of property as a measure of wealth and the appropriateness of public school pupil counts as a unit of load. Those opposing the per public school pupil measurement unit have suggested that this measure is unfair to certain types of school districts such as major urban centers and communities with large concentrations of private school pupils. Advocates of the economic indicator approach have argued that income or some combination of economic indicators is a better measure of local fiscal capacity than property, regardless of the particular taxes used. Some have recommended formulas adjusting the traditional property per pupil measure to correct for perceived inadequacies while others have suggested new measures independent of property valuations and/or public school pupil counts. Certain suggested adjustments such as the inclusion of nonproperty taxes available to local units of government are fully consistent with the tax base per pupil approach.

Recent criticism of the property per pupil measure of school district fiscal capacity has focused on the validity of property as an indicator of wealth or available economic resources. Two major lines of criticism are apparent. The first, based on the tax base approach to measuring local fiscal capacity, points to the increasing importance of local nonproperty tax revenues and suggests that all major local revenue sources should be included in the measurement of local fiscal capacity. The second criticism, consistent with the economic indicator approach, contends that no measure of wealth is satisfactory unless it correlates highly with income or related economic indicators regardless of the tax bases utilized.

Since their introduction in the 1930s, increased significance has been given to local nonproperty taxes on such bases as income and sales as sources of local government revenues. Between 1942 and 1966, nonproperty taxes increased from 7.6 percent to 12.9 percent of total local government revenues; by 1974 this proportion had increased to 17.8 percent (Benson, 1978; Moore, 1971). Local school districts in most states have not used these taxes as heavily as have local governments; 98 percent of local school district revenues are currently derived from property taxation (Johns and Morphet, 1975).

Despite the small average contribution of local nonproperty taxes to school districts, these taxes are quite significant revenue sources for school districts in some states. School districts in Maryland and Pennsylvania receive revenue directly from local income taxation. In Kansas 15 percent of state income taxes are returned to the school districts of resident taxpayers. Alabama, Louisiana, and Nevada school districts receive revenues directly from local sales taxes, while in Virginia revenue from one-cent state sales tax is apportioned among school districts on the basis of school population. School districts in North Carolina, Tennessee, and other states receive appropriations of local sales tax revenue from county government units.

In a 1971 National Educational Finance Project (NEFP) study, Moore examined the implications of fiscal equalization on local nonproperty taxes. Utilizing a sample of seven states with major local nonproperty taxes, Moore found that central city districts received the greatest amount of revenue per pupil, followed in order by suburban, indepen-

dent city, and rural districts. Use of local nonproperty taxes was demonstrated to be significantly disequalizing as the rural districts were the least wealthy in terms of property valuation per pupil.

The disequalizing effects of these local revenues strengthens the justification for including local nonproperty taxes in the measurement of local fiscal capacity. Johns (1972) alluded to this matter in summarizing the conclusions of the NEFP with regard to alternative measures of local capacity:

> The local taxpaying ability of school districts in reality is not their theoretical taxpaying ability, but rather a measure of their accessibility to local tax revenue. If a district only has the authority to levy property taxes then its local taxpaying ability (or effort to support schools) should be measured only in terms of the equalized value of the taxable property in that district. However, if a district has the power to levy local nonproperty taxes, such as payroll taxes, sales taxes, utility taxes, etc., then the yield of such local nonproperty taxes can justly be incorporated in the measure of the taxpaying ability of that district. (p. 365)

Several states authorizing school district access to nonproperty tax revenues incorporate measures reflecting such accessibility in their respective school finance equalization programs. Kansas utilizes a local fiscal capacity measure including a four-year average of adjusted property valuation and taxable resident incomes. Required local effort for the Louisiana foundation program includes a five-mill property tax plus severance tax receipts and one-half of receipts from the leasing of school lands. The Maryland school equalization program defines local fiscal capacity in terms of property valuation and taxable income per pupil. In New Mexico P.L. 874 funds, forest reserve, and regular vocational revenues, as well as local share of motor vehicle license fees and the yield of an 8.925-mill property tax, are included in local required effort. The Nevada foundation program requires a local one-cent sales tax as well as a 7-mill property tax. Pennsylvania recently adopted a local fiscal capacity index incorporating a 60 percent weighting for property valuation per pupil and a 40 percent weighting for personal income per pupil. Each of these measures of local fiscal capacity is consistent with the tax base approach in that local school districts in each state have legal access to the economic bases incorporated in the state's capacity measure.

Proponents of the economic indicator approach assert that the use of these indicators, especially income, should not be limited to states in which local school districts have access to income, sales, or related nonproperty taxes. Three basic propositions have frequently been used in support of this approach. First, personal income is generally accepted as the best available indicator of individual ability to pay, regardless of the tax being levied. Second, numerous studies have reported that the distribution of income among school districts is not closely correlated with the distribution of property wealth among districts. Finally, income is a significant factor in determining school district fiscal behavior.

The principle that tax burdens should be distributed among individuals in accordance with ability to pay is undoubtedly the most widely-accepted criterion of taxpayer equity in contemporary American society. The ability-to-pay principle involves consideration of both horizontal and vertical equity. Horizontal equity implies that individuals with equal taxpaying ability should bear equal tax burdens; vertical equity suggests that individuals with unequal taxpaying ability should pay different amounts of tax. John Stuart Mill (1893) summarized the ability-to-pay principle as follows: "The subjects of every state ought to contribute to the support of governments, as nearly as possible in proportion to their respective abilities . . . ."

Application of this principle is clearly dependent on the selection of a standard of ability-to-pay. This choice depends upon societal value judgments, not the application of positive economics or other technical procedures. In the United States individual ability-to-pay has been defined in terms of income or wealth, with income the most commonly

used measure (Benson, 1978; Herber, 1971). Despite extensive economic analysis no consensus has been reached in defining the extent to which tax burdens should increase as incomes increase. It is agreed that the distribution of taxes should not be regressive with respect to income, but the question of proportionality versus progressivity has not been resolved.

Differences in the distribution of income and property among districts within states have been recognized in the field of school finance. Morrison (1930) and Strayer and Haig (1923) were among those observing such differences. During the 1960s several researchers found low correlations between property and income measures of local capacity. James, Thomas, and Dyck (1963) derived simple correlations between school district property valuation per capita and median family income of .56 in Wisconsin, .40 in New York, .38 in Oregon, .34 in California, .30 in Massachusetts, .26 in New Jersey, .09 in New Mexico, .01 in Washington, and -.18 in Nebraska. Davis (1963) reported a rank order correlation coefficient of .22 between per capita income and per capita property valuations for California counties; the correlation for urban counties separately (.14) was lower than that for rural counties (.38). Hickrod and Sabulao (1969) found that correlations between median family income and assessed property valuation per pupil among suburban school districts in the Boston, Chicago, Cleveland, Detroit, and St. Louis areas were not significantly different from zero. Johns and Kimbrough (1969) reported rank order correlations between per capita personal income and per capita equalized property valuation in large school districts of .637 in Kentucky, .469 in Florida, .442 in Georgia, and -.098 in Illinois. Farner and Edmondson (1969) found little or no correlation between equalized property value per pupil and income per pupil in their study of 11 western states.

Results from recent studies have confirmed continued disparities. In 1977 Odden reported correlations between assessed valuation per pupil and median family income of .37 in Connecticut, .17 in Colorado, .11 in South Dakota, and -.10 in Washington. In a Missouri study Odden (1978) found a correlation of .19 between average school district adjusted gross income per tax return and property wealth per pupil. Hickrod and Hubbard (1977) observed that the relationship between income and property valuation in Illinois is linear in the lower wealth ranges and meaningless in the above median wealth levels. Given the low correlation between income and property, the two measures may represent different aspects of taxpaying ability. A measure incorporating both income and property may be a more comprehensive indicator of school district wealth than property valuation alone.

In addition to the correlational research bearing on property and income, related research shows that poor families do not necessarily reside in property poor school districts. The impact of this research was evident in the *Rodriguez* decision of the United States Supreme Court (93 S.Ct. 1278, 1973). Justice Powell, in the majority opinion of the Court, noted:

> Yet recent studies have indicated that poorest families are not invaribly clustered in the most impecunious school districts. Nor does it now appear that there is any more than a random chance that racial minorities are concentrated in the property-poor districts.

A Connecticut study cited by the Court *(San Antonio Independent School District v. Rodriguez)* found that low-income families commonly lived in industrial or commercial communities with high property valuation per pupil. Others, including Benson (1975) and Hickrod, Yang, Hubbard, and Chaudhari (1975) have observed that the problem of poor families in rich districts is particularly apparent in major cities. These cities tend to have large numbers of poor families; however, their high average wealth precludes these families from receiving the benefits of school equalization programs.

Research identifying a relationship between income and school district fiscal behavior is often cited as a third major argument favoring incorporation of economic indicators in the measurement of local fiscal capacity. Several studies have found income to be positively associated with school tax rates and/or school district expenditures. In a 1963 study of 589 school districts in ten states, James, Thomas, and Dyck concluded that a definite positive relationship existed between educational expenditures and wealth as measured by equalized valuation and by median family income. Income and property valuation were among the most effective predictors of educational expenditures in a 1966 study of large city school districts (James, Kelly, and Garms, 1966). Johns and Kimbrough (1969) found a positive linear relationship between income and tax effort in Illinois and Kentucky.

More recent studies have reported significant relationships among wealth measures, tax effort, and educational expenditures. Alexander and Kay (1973) reported that in Kentucky low effort school districts tended to have a high proportion of income derived from farm property or had a high percentage of low income families, while high effort districts had both high family income and a high percentage of tax paid by commercial and industrial property. In a Missouri study, Odden (1978) reported that property valuation and income correlated .79 and .45, respectively, with expenditure per pupil and .19 and .33, respectively, with school tax rates. Gensemer (1976) identified a strong positive relationship in Ohio between median family income and tax effort for education. Yang and Chaudhari (1976) found low income to be associated with medium to low effort for education in Illinois, while high income, high educational attainment, high occupational status, and high residential housing value were associated with high effort.

Citing the positive relationships between income, property tax effort, and education expenditures, advocates of the economic indicator approach assert that an income adjustment should be made in the apportionment of state equalization aid. Such an adjustment is seen as particularly important in states using a District Power Equalizing (DPE) or Guaranteed Tax Base (GTB) approach in that the apportionment of equalization aid depends in part on local tax rates. Supporters of this position argue that such incentives are needed to reduce expenditure disparities and are justified because a given tax rate represents a greater burden on low income districts in relation to ability-to-pay. In effect, districts in which average incomes are low should be guaranteed a higher expenditure level for a given tax rate than districts in which average incomes are high, or conversely, that low income districts should receive the same guaranteed expenditure as high income districts for a lower property tax rate.

Connecticut, Virginia, Rhode Island, and Missouri, which do not authorize school district access to income tax revenues, currently make adjustments based on local income in the apportionment of state equalization aid. The Connecticut equalization program uses the ratio of district median family income to state median family income as an adjustment to property valuation per capita. Virginia weighs individual income with taxable sales and property in a composite index, with respective weights of 40 percent, 10 percent, and 50 percent, measured on a per pupil and a per capita basis. The fiscal capacity of Rhode Island school districts is based on equalized property valuation per pupil modified by the ratio of district median family income to state median family income. The Missouri school finance program defines local fiscal capacity in terms of property valuation per pupil; however, an income adjustment is applied in determining each district's required local effort for the foundation portion of the program. The local deduction tax rate is modified by one-half of the deviation from the statewide average of the district's adjusted gross income per tax return.

Criticism of the economic indicator approach as used in these four states has focused primarily on three issues. First, as Mort observed in 1933, local school districts have no power over their tax system

except through state action; therefore, fiscal capacity measurement should be limited to the economic bases available to the local taxing jurisdiction in order to provide horizontal individual tax equity. Second, as Benson demonstrated in a 1972 California study, the use of an income factor in the apportionment of state equalization aid redistributes state aid and tax relief to low average income districts rather than to low income families. Finally, alternative methods are available for addressing the problems associated with the traditional property valuation per pupil measure of local fiscal capacity.

The concept of horizontal tax equity is an old and widely-accepted principle of taxation. It suggests that individuals with equal ability to pay should bear equal tax burdens. The economic indicator approach applies this concept to school equalization programs using the district as the unit of analysis. Districts with equal average wealth are said to have equal taxpaying ability regardless of the tax bases available to the local district. Mort (1933) questioned the equity of this approach, noting that it would unfairly burden individual taxpayers in school districts which have wealth which is not taxable under the actual system of taxation:

> A district may be the situs of great wealth, yet if a large part of it cannot be taxed locally, the part that is taxed is penalized heavily. (p. 130)

Where property is the only locally available tax base, use of theoretical taxpaying ability in a state equalization program requires that districts with a high ratio of income-to-property levy higher property tax rates than other districts. This disparity in tax rates is defended on the grounds that districts where average income is above that for the state as a whole can afford to pay higher tax rates; however, it violates the horizontal equity principle as applied to the individual taxpayer. Since poor families live in districts whose average incomes exceed the state average, the use of adjustments for average school district income requires these poor families to pay higher property tax rates than families in districts whose average income is lower. At all other levels of individual income, those who live in a district where average incomes are low pay lower property tax rates for a given expenditure guarantee than taxpayers with the same income living in districts where average incomes are high.

Benson (1972) pointed out that a school district average income adjustment in a state school finance program will not necessarily help low income families. A standard property based DPE program and an income modified or progressive DPE program were simulated and the effects on low income households in eight California school districts were examined. Under the standard DPE program it was found that approximately one-half of the low income households would experience school tax increases rather than decreases because of their residence in property wealthy districts. The income weighted or progressive DPE program was found to further increase tax rates and further decrease expenditure levels of low income residents in San Francisco, Berkeley, and Oakland, where average incomes were high despite large concentrations of poor families. Additionally, a horizontal inequity concerning the taxation of commercial and industrial property was noted:

> Unfortunately, progressive DPE would protect entire districts rather than individual households. It would impose lower tax rates than regular DPE on all districts with less than average income per pupil. But, if industrial and commercial property tends to be concentrated in districts where the residents have relatively low income, then progressive DPE would have the effect of reducing the average property tax rate paid by industrial and commercial property. In other words, while progressive DPE is designed to protect low-income households, it may also protect industrial and commercial enclaves. (Benson, 1972, p. 67)

Alternatives to the progressive DPE plan suggested by Benson included full state funding of public education, standard DPE with a circuit

breaker to provide direct assistance to low income households, and DPE with a split property tax rate to prevent horizontal inequities in the taxation of industrial and commercial property. The standard DPE with a circuit breaker was recommended because it would (a) provide fiscal neutrality by requiring equal property tax rates for an equal expenditure level, and (b) provide direct tax relief to low income households. Progressive or income-modified DPE, however, was described as preferable to standard DPE without a circuit breaker.

Fiscal Equalization in North Carolina

In North Carolina, as in other states, wide variations in local fiscal capacity and effort have resulted in disparities in the revenues and expenditures of local school districts. Due to the high level of state support and the relatively small number of local operating units, the magnitude of fiscal disparities among school districts is smaller than that found in most states. However, this does not imply that full fiscal neutrality exists. Weilmuenster (1978) summarized the dimensions of fiscal disparity within the state for the 1975-76 school year as follows:

> It was seen that very high spending districts spent only about 12.6 percent more per pupil from *state* funds than did very low spending districts. This *percentage* disparity was 341 percent however, in spending from *local* funds alone and 43.3 percent in spending from combined *state and local* funds. (p. 2)

Additional information regarding the need for fiscal equalization may be gathered by examining data for individual school districts and counties. In 1975-76 countywide average expenditures from the state basic program and local discretionary sources fell below $800 per pupil in Alexander, Cherokee, Davie, Onslow, Robeson, and Yancey counties while expenditures from these sources exceeded $1,000 per pupil in Clay, Durham, Forsyth, Mecklenburg, Orange, and Tyrrell counties. The range in expenditures per pupil is generally greater among counties than within a county; however, significant disparities in current expenditures from state and local funds exist within a number of counties. For example, 1975-76 current expenditures per pupil from local and state sources were $966 in Guilford County and $1,125 in Greensboro City, $893 in Buncombe County and $1,171 in Asheville City, and $767 in Fairmont and $860 in Red Springs.

Substantial variations in local fiscal capacity as well as expenditures are evident among school districts and counties. In 1975-76 the range of county fiscal capacity as measured by adjusted property valuation per ADM was from 3.037 times the state median in Brunswick County to .459 times the median in Robeson County, a ratio of 6.62 to 1. The range of county contribution to state general fund per ADM, an alternative indicator of local fiscal capacity, was from 1.750 times the state median in Forsyth County to .473 times the median in Caswell County, a ratio of 3.70 to 1. While the wealth disparity among counties was greater in terms of property than contribution to state general fund, both fiscal capacity indices identified substantial variations among North Carolina counties in ability to support public education. As is the case with countywide expenditure figures, the use of county wealth indices masks some of the variability in actual school district wealth. School districts within counties frequently have similar capacities; however, in some counties wealth variability among districts is substantial. For example, the fiscal capacity of Elkin City as measured in terms of property per ADM is 124 percent greater than that of Surry County; the capacity of Asheboro City is 54 percent greater per pupil than that of Randolph County.

Variations in discretionary revenues and expenditures reflect in large measure the differences among school districts and counties in fiscal capacity to support the public schools. While there is not a one-to-one correspondence between higher

fiscal capacity and higher local revenues and expenditures, there is a strong, positive relationship between local fiscal capacity indicators and various revenue and expenditure measures. Weilmuenster (1978) reported that county average expenditure per ADM for 1975-76 correlated .71 and .47 with contribution to state general fund and property, respectively. In 1976-77 local school district revenue per ADM correlated .44 with county property, .66 with a county contribution to the state general fund plus property index, .50 with a property plus sales index, .52 with school district property, and .61 with school district income. In analysis, it is difficult to separate the effect of wealth variables from that of variables which reflect community tastes or preferences for educational services. For example, median educational level of the county was found to correlate rather highly with both income and educational expenditures, indicating that communities with high average income may have greater preferences and capacity for educational spending in relation to other public services than lower income communities.

Local fiscal capacity variations are a major determinant of the quantity of fiscal resources available to the public school children of North Carolina. Present disparities in local fiscal capacity and resulting variations in educational resources point to a need for a state school finance equalization program in order to move toward full fiscal neutrality. Major questions in the development of an equalization program which relate to fiscal capacity include (a) whether to equalize at the county or school district level, (b) what measure of fiscal capacity should be used to bring about fiscal neutrality, and (c) what formula is most satisfactory for combining state and local funds to approach neutrality.

Full fiscal neutrality cannot be attained without equalizing to the lowest level of government having access to resource bases. Inequalities in discretionary expenditures per pupil within counties presently result from supplemental school district property taxes voted by the people and levied by the county commissioners. In 1975-76 such levies totaled approximately $30 million statewide (N.C. Department of Revenue, 1976, Table 67). Additional disequality resulted from the distribution of local one-cent sales tax revenues among school districts in some counties on an *ad valorem* basis. On the other hand, the bulk of local school revenues are derived from countywide tax levies; in 1975-76 more than $200 million was allocated to the schools from countywide property tax revenues (N.C. Department of Revenue, 1976, Table 66). More complete information concerning local fiscal capacity is available at the county level than at the school district level. In recognition of these factors the Governor's Commission on Public School Finance elected to focus on fiscal equalization at the county level.

Alternative Fiscal Capacity Measures

Local fiscal capacity can be measured through the use of available economic indicators or through direct analysis of the governmental unit's actual access to taxable resources. As indicated in reviewing the development of major alternatives, rational arguments can be made for fiscal equalization using either basis of measurement. Traditionally, local capacity to support public education has been measured in terms of property valuation per pupil and most states have continued to use this approach. In recent years two alternatives to the traditional property measurement have been suggested. The first alternative proposes that major local nonproperty taxes be incorporated in the fiscal capacity measure to reflect the accessibility of local governments to these tax bases. A second viewpoint has noted that property is not closely related to theoretical ability-to-pay and has recommended the utilization of economic indicators relating to ability-to-pay, irrespective of the tax bases available to local governmental units. A thorough review of alternative fiscal capacity measures should include

analysis of measures representing the traditional property approach, the broader view of locally available tax bases, and the economic indicator method. These approaches are reflected in the alternatives examined in this study.

The first alternative is a property wealth index, based on county property valuations as adjusted by Wilde (1978) of the University of North Carolina, Chapel Hill. This adjustment took into account the eight-year revaluation cycle for real property; however, inaccuracies due to nonuniform assessment practices were not corrected. A weighting of 1.000 on this index represents the median adjusted assessed valuation of property per ADM of pupils.

The second alternative is the wealth index developed by Weilmuenster (1978) which combines county contribution to the state general fund per pupil and adjusted property valuation per pupil. An index for contribution to the state general fund was computed based on a median pupil value of 1.000; the property and general fund indices were then combined by adding one-tenth of the property index to nine-tenths of the general fund index. This index represents a compromise position between the economic indicator approach and the tax base approach in that the property and sales tax bases are accessible to county governments, while the remaining elements of the general fund contribution do not represent sources of revenue available at the county level. Given the 90 percent weighting for contribution to state general fund, this index more closely represents the economic indicator approach than the available tax base approach.

To examine the effect of incorporating major local nonproperty taxes in the computation of local fiscal capacity while maintaining the principle of using only those tax bases which are accessible at the local level, a third alternative combining property and taxable retail sales was examined. A taxable retail sales per pupil index was computed and combined with the adjusted property valuation index for each county using a 78 percent weighting for property and a 22 percent weighting for taxable retail sales. The weights were selected to reflect the relative contribution of the one-cent sales tax and the countywide property tax as sources of county revenue.

Finally, property valuation, taxable retail sales, and county contribution to state general fund per ADM were combined to form a fourth measure of local fiscal capacity. This combination index is based on the position that the fiscal capacity of counties to support public education is a function of both the tax bases accessible to counties and the economic ability-to-pay of taxpayers. The property plus sales index formed the basis of this wealth measure; this basis was then modified by general fund adjustment. More specifically, the combination wealth index was computed by multiplying the property plus sales index by an adjusted general fund index. The property plus sales indices of counties with state general fund contribution per ADM below the state median were adjusted downward to reflect their low ability-to-pay; that of counties with state general fund contribution per ADM above the state median were adjusted upward to reflect their relatively high ability-to-pay.

An Illustrative Equalization Model

The impact of alternative local fiscal capacity measures on the distribution of state equalization aid depends on the characteristics of the equalization program in which they are employed. Significant variables include the level of state equalization funding, the presence of local effort requirements and limitations, the level of wealth guaranteed, and the extent to which local tax leeway is equalized. An illustrative equalization model is specified and the four alternative wealth measures are compared using this model as a common denominator. The hypothetical model should not be viewed as a recommended program, but rather as a tool for comparing the effects of the alternative measures of local fiscal capacity. It represents one type of approach which, if acted upon, would be seen as ex-

perimental; no actual manipulation of variables have been verified.

The dimensions of the illustrative equalization model are as follows:

1. Each district would continue to receive its basic state allotment.
2. The state would provide an additional $40 million to be distributed on an equalized basis.
3. Local fiscal capacity would be measured at the county level.
4. There would be a required local effort of $129,831,936 statewide divided among districts on the basis of equal effort in relation to fiscal capacity; no limits would be placed on local tax levies beyond present restriction.
5. State aid would be provided to equalize the required local effort; additional local levies above the required level would remain unequalized.
6. A guaranteed wealth level would be selected for each fiscal capacity measure so as to allocate state dollars among districts beginning with the poorest and moving to districts of greater wealth until the $40 million equalization fund is depleted.
7. Local effort was assumed to remain constant, except for increases due to the required effort provision; while some districts would undoubtedly reduce local taxes in response to equalization, others might respond to the lowered price of educational services by increasing local effort and no constant rate of response could reasonably be predicted.
8. The mechanics of the system would be as follows:

$$\text{State Matching Ratio} = \frac{\text{Guaranteed Wealth}}{\text{District Wealth}} - 1$$

State Equalization Aid = State matching ratio × required local effort.

Under this program counties whose wealth was greater than the state guarantee would receive no equalization aid. The state matching ratio for counties below the guaranteed wealth would increase as county wealth decreased. For example, a county whose wealth was at three-fourths of the guaranteed wealth would receive 33 cents from the state for each dollar of required local effort; a county whose wealth was one-half of the guaranteed wealth would receive one dollar from the state. The illustrative model equalized only the equivalent of the first 20 cents of local revenue effort. This relatively low local effort requirement, approximately equal to one-half of the state average effort, would require few counties to increase local tax rates. This program permits wider participation of counties than alternatives with unlimited state matching of local effort.

The first step in the simulation of the illustrative equalization program involved computation of the wealth guarantee using each alternative measure of fiscal capacity. As shown in Table 5-1, the guaranteed wealth indices using property, general fund plus property, property plus sales, and property plus sales modified by general fund contribution were 1.352, 1.343, 1.330, and 1.334, respectively. The combination approach was found to exclude the largest number of counties, 15, and pupils, 379,965, or 32.5 percent of total state ADM. The number of counties excluded from participation was minimized under the general fund plus property approach; however, the property plus sales method excluded fewer students. Catawba, Dare, Forsyth, Guilford, Mecklenburg, New Hanover, and Wake counties fell above the guaranteed wealth using all four measures. The property and property plus sales wealth measures excluded high property, low income counties such as Brunswick, Macon, and Stokes from participation while the general fund plus property index did not.

The impact of the illustrative equalization model on 20 selected counties is traced in Tables 5-2 through 5-9. Counties are listed in rank order from richest to poorest based on a countywide average and would be applied uniformly to all school districts within a county. The wealthiest and the most

Table 5-1

Counties Above Guaranteed Wealth Level Based on Alternative Wealth Measures

Property Index			General Fund Plus Property Index			Property Plus Sales Index			Combination Index		
County	Wealth Index	1975-76 ADM	County	Wealth Index	1975-76 ADM	County	Wealth Index	1975-76 ADM	County	Wealth Index	1975-76 ADM
Brunswick	3.276	7,641	Forsyth	1.731	44,507	Dare	2.804	1,988	Dare	3.480	1,988
Dare	3.087	1,988	Mecklenburg	1.702	76,889	Brunswick	2.665	7,641	Brunswick	2.433	7,641
Stokes	2.215	6,549	Guilford	1.519	67,092	Macon	2.006	3,362	Mecklenburg	2.367	76,889
Macon	2.271	3,362	Wake	1.482	53,360	Stokes	1.869	6,549	Forsyth	2.110	44,507
Mecklenburg	1.738	76,889	Durham	1.472	25,845	Mecklenburg	1.755	76,889	Macon	1.935	3,362
Jackson	1.661	3,816	Dare	1.450	1,988	Catawba	1.566	21,125	Catawba	1.901	21,125
Catawba	1.648	21,125	Catawba	1.450	21,125	Forsyth	1.535	44,507	New Hanover	1.800	20,011
Person	1.643	6,452	New Hanover	1.389	20,011	New Hanover	1.517	20,011	Wake	1.764	53,360
Forsyth	1.560	44,507	Orange	1.369	10,621	Jackson	1.449	3,816	Guilford	1.758	67,092
New Hanover	1.535	20,011				Person	1.421	6,452	Durham	1.593	25,845
Alleghany	1.489	1,891				Wake	1.414	53,360	Orange	1.526	10,621
Carteret	1.434	7,208				Guilford	1.387	67,092	Stokes	1.511	6,549
Orange	1.370	10,621				Carteret	1.337	7,208	Jackson	1.365	3,816
Wake	1.370	53,360							Carteret	1.349	7,208
Guilford	1.366	67,092							Buncombe	1.335	29,951
Total ADM		332,512			321,438			320,000			379,965
Wealth Guarantee		1.352			1.343			1.330			1.334
Percent ADM Below Guarantee		71.50			72.50			72.60			67.50
Percent Counties Below Guarantee		86.00			91.00			87.00			85.00

Source: 1975-76 ADM from *Statistical Profile, N.C. Schools, 1977. Raleigh, Department of Public Education, 1977.*

Table 5-2
Alternative Local Wealth Measures

District	Property Wealth Index	State General Fund (.9) Plus Property (.1) Index	Property (.78) Plus Sales (.22) Index	Combination Index
Dare	3.087	1.697	2.804	3.480
Brunswick	3.276	1.071	2.665	2.433
Forsyth	1.560	1.731	1.535	2.110
Rowan	1.256	1.194	1.187	1.298
Buncombe	1.154	1.252	1.180	1.335
Transylvania	1.298	0.984	1.151	1.121
Iredell	1.152	1.044	1.096	1.113
Beaufort	1.002	1.003	1.009	1.010
Wilson	0.959	1.075	1.002	1.046
Surry	0.969	0.963	0.979	0.959
Alamance	0.959	1.165	0.962	1.053
Jones	0.948	0.603	0.817	0.639
Randolph	0.865	0.878	0.811	0.762
Craven	0.744	0.897	0.798	0.768
Halifax	0.757	0.828	0.780	0.716
Polk	0.716	1.206	0.702	0.794
Caswell	0.737	0.499	0.620	0.456
Johnston	0.544	0.739	0.586	0.516
Alexander	0.598	0.709	0.571	0.491
Robeson	0.459	0.565	0.489	0.386

impoverished counties according to each wealth measure are included as are districts of intermediate wealth, showing counties at various levels of wealth on each index.

Wealth indices for the sample counties are given in Table 5-2. The wealth rankings of most counties are highly consistent across the four alternative indices. Dare, Forsyth, and Rowan are relatively wealthy on all four measures while Johnston, Alexander, and Robeson are poor regardless of the index employed. Some counties such as Brunswick and Polk, however, appear much wealthier on some indices than on others. The ratio for 1975-76 between the wealthiest and poorest counties in terms of the property, general fund plus property, property plus sales, and combination indices were 6.62 to 1, 3.47 to 1, 5.73 to 1, and 9.25 to 1, respectively. While the additive combination of property and general fund wealth tends to reduce the apparent disparity among counties, the use of a general fund multiplier to adjust the property plus sales index increases this disparity. This increase reflects the fact

Table 5-3
State Matching Ratios[1]

District	Property Wealth Index	State General Fund (.9) Plus Property (.1) Index	Property (.78) Plus Sales (.22) Index	Combination Index
Dare	—	—	—	—
Brunswick	—	0.25	—	—
Forsyth	—	—	—	—
Rowan	0.08	0.13	0.12	0.03
Buncombe	0.17	0.07	0.13	—
Transylvania	0.04	0.37	0.16	0.19
Iredell	0.17	0.29	0.21	0.20
Beaufort	0.35	0.34	0.32	0.32
Wilson	0.41	0.25	0.33	0.28
Surry	0.37	0.40	0.36	0.39
Alamance	0.41	0.15	0.38	0.27
Jones	0.43	1.23	0.63	1.09
Randolph	0.56	0.53	0.64	0.75
Craven	0.82	0.50	0.67	0.75
Halifax	0.79	0.62	0.71	0.86
Polk	0.89	0.11	0.89	0.68
Caswell	0.53	1.69	1.15	1.92
Johnston	1.49	0.82	1.27	1.58
Alexander	1.26	0.89	1.33	1.71
Robeson	1.94	1.38	1.72	2.46

[1]State Matching Ratio = $\frac{\text{Guaranteed Wealth}}{\text{County Wealth}} - 1$

Guaranteed Wealth Levels were 1.352 for property, 1.343 for general fund plus property, 1.330 for property and sales, and 1.334 for the combination index.

that North Carolina counties with access to large property and sales tax bases also tend to have high income or wealth from which to pay local taxes while counties poor in terms of property and sales tend to have relatively low ability-to-pay as measured by income or wealth.

State matching ratios for each selected county under the alternative wealth measures are presented in Table 5-3. These ratios indicate the amount of state aid received per dollar of required local effort. Due to the slightly greater range of wealth among counties on the property and property plus sales in-

Table 5-4
Required Local Effort per ADM[1]

District	Property Wealth Index	State General Fund (.9) Plus Property (.1) Index	Property (.78) Plus Sales (.22) Index	Combination Index
Dare	$311	$170	$292	$335
Brunswick	335	111	278	234
Forsyth	160	180	160	203
Rowan	128	124	124	125
Buncombe	118	130	123	128
Transylvania	133	102	120	108
Iredell	118	106	114	107
Beaufort	102	104	105	97
Wilson	98	111	104	101
Surry	101	100	102	92
Alamance	98	121	100	101
Jones	97	66	85	61
Randolph	88	91	84	73
Craven	76	93	83	73
Halifax	77	86	81	69
Polk	73	125	73	76
Caswell	75	52	64	44
Johnston	56	77	61	50
Alexander	61	74	59	47
Robeson	47	59	51	37

[1]Local share of $129,831,936 local levy apportioned among districts based on "equal effort" in relation to alternative wealth measures. $129,831,936 is equivalent to a 20 cent property levy on adjusted assessed valuation.

dices than on the general fund plus property index, the poorest counties receive higher matching ratios under the indices based on property than under an index based largely on the general fund contribution. Robeson, the poorest county in terms of property valuation, would receive $1.94 in state aid per dollar of required local effort if the property index was used; Caswell, the poorest county in terms of general fund plus property, would receive $1.69 in state aid per dollar of required local revenue. Based on the identification of wider fiscal capacity disparities among counties, state matching ratios for the poorest counties are moderately greater under the combination index than under alternative local wealth measures, ranging to a maximum of $2.46 in state aid per dollar of required local effort in Robeson County.

Table 5-4 presents the required local effort per ADM for each selected county. These figures were obtained by multiplying each county's percentage

Table 5-5

State Equalization Aid Per ADM[1]
Total State Equalization Aid = $40,000,000

District	Property Wealth Index	State General Fund (.9) Plus Property (.1) Index	Property (.78) Plus Sales (.22) Index	Combination Index
Dare	$ 0	$ 0	$ 0	$ 0
Brunswick	0	28	0	0
Forsyth	0	0	0	0
Rowan	10	15	15	3
Buncombe	20	9	16	0
Transylvania	5	37	19	20
Iredell	20	31	24	21
Beaufort	36	35	33	31
Wilson	40	28	34	28
Surry	37	39	37	36
Alamance	40	18	38	27
Jones	41	77	58	67
Randolph	50	48	54	55
Craven	62	46	55	55
Halifax	61	53	57	59
Polk	65	14	65	52
Caswell	63	87	74	84
Johnston	83	63	77	79
Alexander	77	66	79	81
Robeson	91	81	87	91

[1]State equalization aid = state matching ratio × required local effort.

of total statewide wealth under each alternative fiscal capacity measure by the total statewide required local effort, $129,831,936, and dividing by county ADM. Since each county raises local revenue in proportion to its percentage of total state wealth, these figures represent "equal effort" on the part of each county. Districts levying less than this amount would not qualify for participation in the equalization program; districts raising more would receive their maximum entitlement based on this amount and would not receive additional state equalization funds for higher levels.

The level of local effort required for the poorest counties is highest under the general fund plus property index and lowest under the combination index. Conversely, the combination index requires greater local effort for the wealthiest counties than the alternative wealth measures while the general fund plus property index requires the wealthiest counties to put forth the least local effort.

Table 5-6

Required Local Effort Plus Equalization Aid[1] per ADM

District	Property Wealth Index	State General Fund (.9) Plus Property (.1) Index	Property (.78) Plus Sales (.22) Index	Combination Index
Dare	$311	$170	$292	$355
Brunswick	335	139	278	234
Forsyth	160	180	160	208
Rowan	138	139	138	128
Buncombe	138	139	138	128
Transylvania	138	139	138	128
Iredell	138	139	138	128
Beaufort	138	139	138	128
Wilson	138	139	138	128
Surry	138	139	138	128
Alamance	138	139	138	128
Jones	138	139	138	128
Randolph	138	139	138	128
Craven	138	139	138	128
Halifax	138	139	138	128
Polk	138	139	138	128
Caswell	138	139	138	128
Johnston	138	139	138	128
Alexander	138	139	138	128
Robeson	138	139	138	128

[1]Totals have been rounded.

In 1976-77 all but four counties below the wealth guarantee raised local revenues in excess of the required local effort per ADM based on the property measure. No eligible counties fell below this level as measured by general fund plus property while two fell below this level when the property plus sales index was applied. The 1976-77 local effort of two eligible counties would have fallen below the required level as determined using the combination index. This signifies that virtually all counties would qualify for participation in the equalization program without increasing current tax rates.

State equalization aid per ADM distributions to each selected district are shown in Table 5-5. State equalization aid per ADM is computed by multiplying the state matching ratio for each county by the required local effort of that county. Under each alternative local wealth measure, the amount of equalization aid per ADM gradually increases as local fiscal capacity decreases. Robeson, the poorest

Table 5-7

Tax Rate Equivalents of Local Effort Requirements[1]

District	Property Index (Property Tax Rate)	General Fund Plus Property Index (Property Tax Rate)	Property Plus Sales Index (Property Tax Rate)	Sales Tax Ratio	Combination Index (Property Tax Rate)
Dare	$0.2000	$0.1093	$0.1552	.0019	2.153
Brunswick	0.2000	0.0663	0.1552	.0019	1.395
Forsyth	0.2000	0.2250	0.1552	.0019	2.542
Rowan	0.2000	0.1927	0.1552	.0019	1.934
Buncombe	0.2000	0.2200	0.1552	.0019	2.174
Transylvania	0.2000	0.1536	0.1552	.0019	1.622
Iredell	0.2000	0.1838	0.1552	.0019	1.816
Beaufort	0.2000	0.2030	0.1552	.0019	1.896
Wilson	0.2000	0.2272	0.1552	.0019	2.050
Surry	0.2000	0.1973	0.1552	.0019	1.822
Alamance	0.2000	0.2464	0.1552	.0019	2.065
Jones	0.2000	0.1291	0.1552	.0019	1.267
Randolph	0.2000	0.2057	0.1552	.0019	1.655
Craven	0.2000	0.2444	0.1552	.0019	1.928
Halifax	0.2000	0.2217	0.1552	.0019	1.777
Polk	0.2000	0.3415	0.1552	.0019	2.084
Caswell	0.2000	0.1373	0.1552	.0019	1.163
Johnston	0.2000	0.2754	0.1552	.0019	1.783
Alexander	0.2000	0.2404	0.1552	.0019	1.543
Robeson	0.2000	0.2493	0.1552	.0019	1.578

[1]Required local effort in relation to specified tax bases.

district under the property and property plus sales indices, would receive $91 in state aid per ADM under the former approach and $87 per ADM under the latter. Caswell, the poorest county in terms of the general fund plus property index, would receive $87 per ADM if that index was used in conjunction with the illustrative equalization formula. The amount of state equalization aid provided to the poorest counties is slightly greater under the combination wealth measure than under the alternative measures of local wealth. While most counties would receive similar amounts under the various approaches, a few districts receive considerably more under some approaches than under others. Brunswick, for example, would receive no equalization under the two measures giving heavy weight to property but would receive $28 per ADM under the general fund plus property index, an amount exceeding that allocated to Rowan, Buncombe, Alamance, and Polk counties. Alamance, however,

would receive $18 under the general fund plus property index in comparison to $40 under the property index or $38 under the property plus sales index.

Table 5-6 summarizes the combined effect of required local effort plus state equalization aid on each selected county. Except for the districts above the guaranteed wealth level, each program results in a uniform guaranteed revenue for each county based on an "equal effort" in relation to county wealth as a proportion of total state wealth. If each county levied only this amount the illustrative equalization model would result in equal revenues for each county at a guaranteed revenue level, except that counties above the guaranteed wealth would generate more for the same effort level. It should be noted that the combination index guarantees appoximately ten dollars less per ADM than the other alternatives because the greater wealth disparities identified by that index channel slightly more state funding to the poorest counties, causing the $40 million state equalization aid to be depleted at a slightly lower guarantee.

Each of the four alternative wealth measures was shown in Table 5-6 to provide a uniform state guaranteed revenue to all counties based on an "equal effort" in relation to local wealth. In each county, the local contributon to this guarantee is based on the county's proportion of state total wealth multiplied by the total local dollars to be equalized. How then do the four approaches differ in their impact on the counties? The wealth of each county varies depending on the wealth measure employed; therefore, its percentage of the state's total wealth varies, resulting in a different total local contribution to the guarantee level.

Table 5-7 shows the local tax rates necessary in each county to generate the county's required share of the $129,831,936 local contribution to the guarantee level.

Tne property wealth index defines local fiscal capacity in terms of adjusted county property valuations. Since property is a tax base which is available to the counties, the local contribution could be raised through a uniform 20-cent property tax levy in each county. Taxpayers in each county would pay the same property tax rates to obtain the same guaranteed revenue. Similarly, since the counties have access to both property and sales taxes, they could raise their required local contribution as defined by the property plus sales index through a uniform 15.52-cent property tax levy plus an appropriation of 19 percent of the one-cent local sales tax. Again, the taxpayers in each county would pay the same tax rates to obtain the same guaranteed revenue per ADM.

The situation would be different if general fund plus property were used as the wealth measure. Each county's required share of the $129,831,936 local levy would be determined based on the proportion of total contribution to the state general fund plus property within each county. However, the counties of North Carolina do not have access to any tax base which is closely related to this wealth measure. If the property tax were employed to raise the revenues to an "equal effort" in relation to general fund plus property wealth, the property tax rates in each county would vary depending on the ratio of general fund plus property wealth to property wealth alone. As shown in Table 5-7, a uniform guarantee for all districts would be achieved only through unequal property tax burdens among counties.

Unequal property tax rates among counties to obtain a uniform guaranteed revenue per pupil may be justified on the grounds that counties poor in terms of general fund should pay lower property tax rates than those rich in terms of general fund. Such an argument would imply that property tax rates should decrease gradually as general fund wealth decreases. Table 5-7 shows that the general fund plus property index is not consistent with this line of reasoning. Johnston, Alexander, and Robeson counties are poor by these standards; their general fund plus property indices are 0.739, 0.709, and 0.565. They are poorer in terms of property alone than they are in terms of the general fund plus property wealth; therefore, it may be argued that they can

Table 5-8

Unequalized Local Revenue per ADM[1]

District	Property Wealth Index	State General Fund (.9) Plus Property (.1) Index	Property (.78) Plus Sales (.22) Index	Combination Index
Dare	$ 38	$179	$ 57	$ 15
Brunswick	0	200	33	77
Forsyth	201	181	200	157
Rowan	3	8	8	7
Buncombe	95	83	90	85
Transylvania	92	122	105	117
Iredell	12	22	16	23
Beaufort	22	20	19	27
Wilson	113	100	107	111
Surry	43	44	42	52
Alamance	66	44	64	63
Jones	31	65	42	66
Randolph	38	36	42	54
Craven	65	49	58	68
Halifax	21	13	17	30
Polk	75	23	75	72
Caswell	32	55	42	63
Johnston	97	76	92	103
Alexander	27	15	29	41
Robeson	38	26	34	48

[1]Unequalized Local Revenue = Total local revenue minus required local effort. Amounts vary within counties; figures given for multi-district counties are for balance of county districts.

justifiably be requested to pay higher property tax rates, $0.2754, $0.2404, and $0.2493, respectively, because of their general fund wealth.

The combination index required unequal property tax rates among counties to reach the guaranteed revenue level. The range in required local tax rates, however, is substantially smaller than the range required under the general fund plus property index. Additionally, there is a consistent pattern in the variation of required local tax rates. Counties with general fund contribution per ADM above the state median pay slightly more than 20 cents, while counties with general fund contribution below the state median pay slightly less than 20 cents. The combination index provides for horizontal and vertical taxpayer equity in the sense that counties with equal ability-to-pay as measured by general fund contribution per ADM are required to levy equal local tax rates. Counties wealthy in terms of general fund contribution per

Table 5-9

Total Local Revenue Plus State Equalization Aid per ADM[1]

District	No Equalization Program	Property Wealth Index	State General Fund (.9) Plus Property (.1) Index	Property (.78) Plus Sales (.22) Index	Combination Index
Dare	$349	$349	$349	$349	$349
Brunswick	311	311	339	311	311
Forsyth	360	360	360	360	360
Rowan	131	141	147	146	135
Buncombe	213	233	22[illegible]	228	213
Transylvania	224	230	262	243	245
Iredell	130	151	161	155	151
Beaufort	124	160	160	158	156
Wilson	211	252	239	245	239
Surry	144	181	183	180	180
Alamance	165	205	183	203	192
Jones	128	169	204	181	194
Randolph	127	177	175	181	182
Craven	142	204	188	197	196
Halifax	98	159	152	156	158
Polk	148	214	163	214	200
Caswell	107	170	194	181	191
Johnston	153	235	215	230	231
Alexander	89	166	154	168	170
Robeson	85	176	165	172	176

[1]Amounts vary within counties; figures given for multi-district counties are for the balance of county districts.

ADM are required to levy slightly higher rates than those poor in terms of general fund contribution per ADM.

Table 5-8 indicates the unequalized local revenue per ADM in each sample district; figures shown for counties with more than one district are for balance of county districts. The amount of unequalized local revenue available to a school district is defined as the total local revenue of that district minus the district's required local effort; therefore, it represents the amount of local discretionary revenue left over after the amount necessary to obtain the guarantee level has been reached. The unequalized local revenue available to a district declines as the amount included in required local effort increases. Thus the amount of discretionary revenue available to any district is related to the measure or index of its wealth. A higher wealth rating, as shown in

Table 5-2, results in less discretionary funding and a lower wealth index results in more such funds. In Alexander County, for example, unequalized local revenue under the combination index is $41 while the comparable figure for Alexander County under the general fund plus property index is $15.

The overall impact of the alternative equalization approaches is summarized in Table 5-9. Clearly, implementation of a fiscal equalization program utilizing any of the alternative local fiscal capacity measures would substantially reduce the present wealth-related disparity among counties in revenue per pupil. Figures 5-1 through 5-5 provide a visual description of the contributions of equalized local revenue, state equalization aid, and unequalized local revenue to the fiscal position of the sample districts under the present North Carolina school finance program and under the illustrative equalizations model employing each alternative approach to measuring local fiscal capacity.

Impact on Individual Taxpayers

The impact of alternative measures of local fiscal capacity on individual taxpayers is an important dimension of state school finance equalization programs. Advocates of the economic indicator approach to local fiscal capacity measurement frequently assert that districts of high average income have greater ability to pay property taxes than districts of low average income and should therefore pay higher property tax rates to achieve a given expenditure level. This argument uses the school district rather than the individual taxpayer as the unit of analysis for studying horizontal and vertical equity of taxation. The economic ability of a school district to pay taxes depends on the nature of the tax sources available to that district and the distribution of incomes within the district, among other factors.

Theoretically, if all taxpayers in high average income school districts had high incomes and if all taxpayers in a low average income school district had low incomes, improved equity in the distribution of the property tax burden could be attained by requiring a higher tax rate in the higher income district than in the low income district for a given expenditure guarantee. High income taxpayers would bear the full weight of the additional burden in the high income district while low income taxpayers would be the sole beneficiaries of reduced taxes. Actually there are substantial numbers of low, medium, or high income taxpayers in nearly all North Carolina counties and school districts.

Stollar and Boardman reported the existence of wide variations in taxpayer incomes within school districts in a 1971 National Educational Finance Project report providing personal income data by school district for 1966. The number of low, middle, or high income tax returns by school district was obtained by merging federal income tax return data with school district zip codes. While the data are outdated, the relative distribution of incomes within North Carolina counties has probably not changed dramatically since the report. The distribution of adjusted gross incomes within the wealthiest ten and the poorest ten counties as measured in terms of contribution to state general fund plus property are given in Table 5-10. This table shows that the proportion of high income families is greater in high wealth districts than low wealth districts and that the proportion of the poor families is greater in low wealth districts than in high wealth districts. However, more than 32 percent of the taxpayers in high average income districts have low incomes while a significant number of taxpayers in low average income districts have high incomes.

The presence of low, medium, or high income taxpayers in both low and high wealth districts suggest that the impact of alternative wealth measures on individual taxpayers as well as school districts should be carefully considered. In a study for the Kentucky Department of Revenue, Lile (1975) estimated the tax burdens on model families at various income levels. The house values used for the $5,000, $10,000, and $25,000 family income levels were $14,000, $20,500, and $43,750, respectively. No attempt was made to adjust for regional

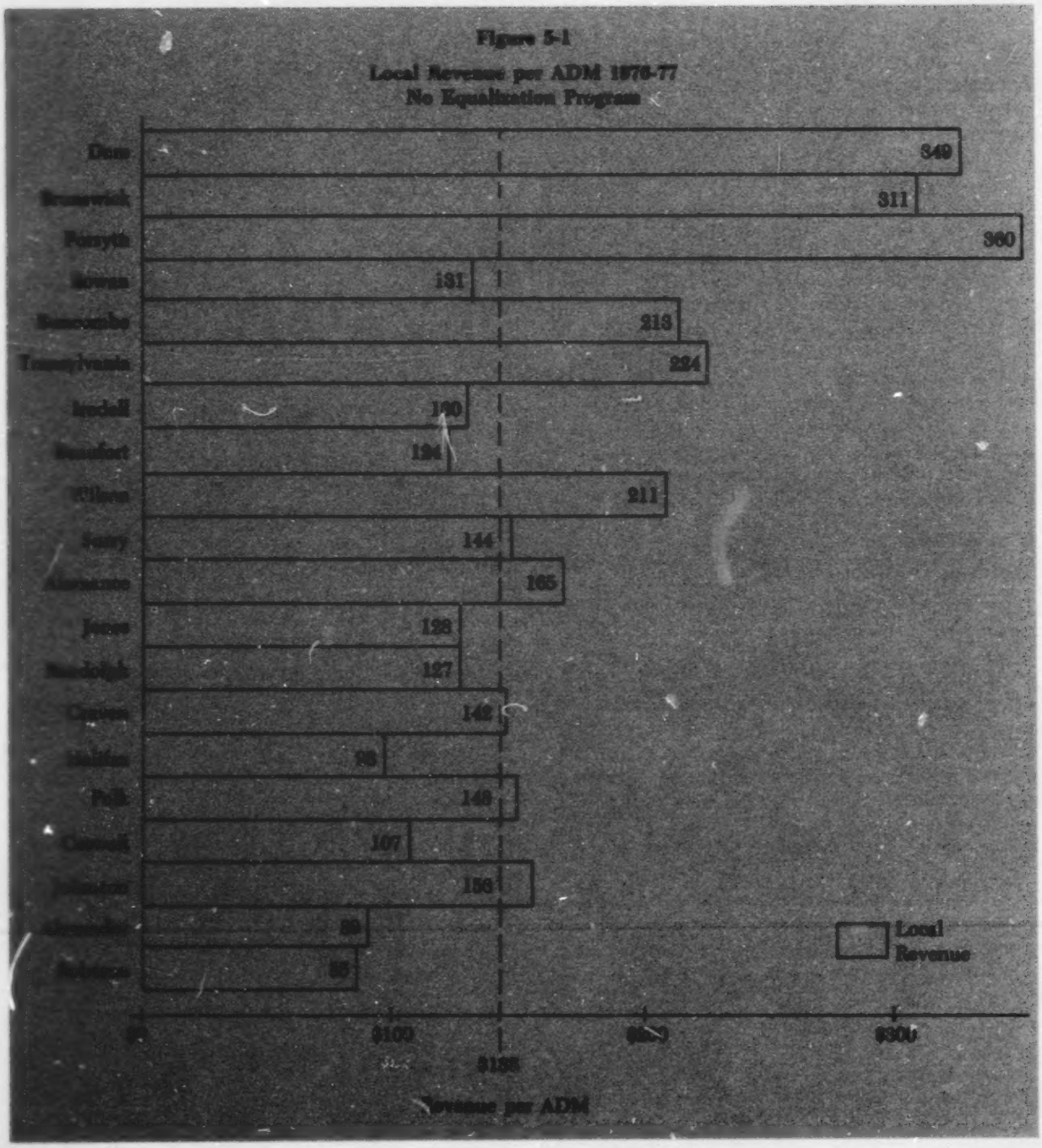


Figure 5-1
Local Revenue per ADM 1976-77
No Equalization Program
Dare
Brunswick
Forsyth
Iredell
Buncombe
Transylvania
Beaufort
Surry
Alamance
Jones
Randolph
Craven
Polk
Caswell
Alexander
Robeson
349
311
360
131
213
224
190
124
211
144
165
128
127
142
93
148
107
156
89
85
Local Revenue
$100
$130
$300
Revenue per ADM

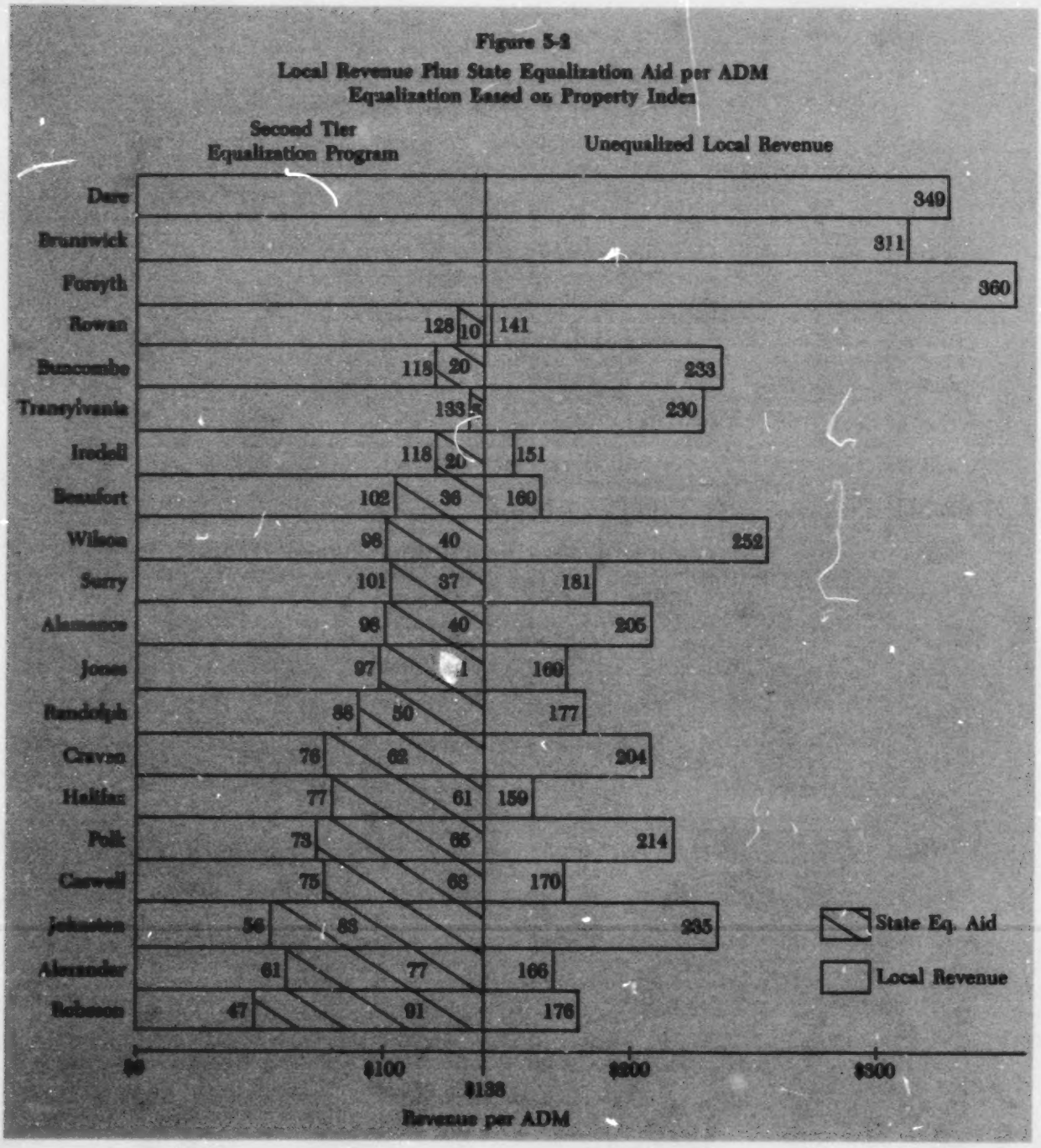
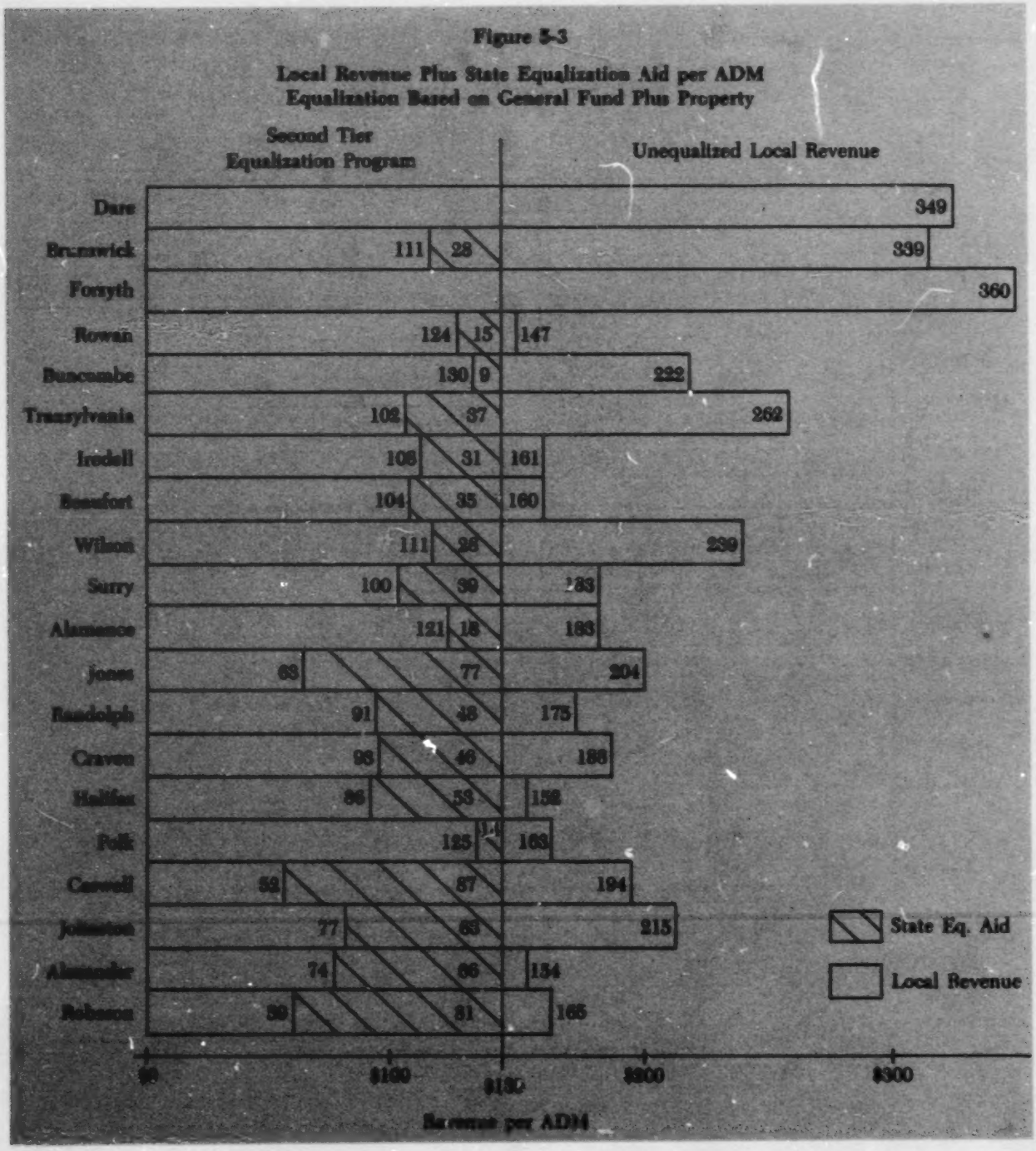


Figure 5-2
Local Revenue Plus State Equalization Aid per ADM
Equalization Based on Property Index
Second Tier
Equalization Program
Unequalized Local Revenue
Dare
Brunswick
Forsyth
Rowan
Buncombe
Transylvania
Iredell
Beaufort
Wilson
Surry
Alamance
Jones
Randolph
Craven
Halifax
Polk
Caswell
Johnston
Alexander
Robeson
349
311
360
128
10
141
118
20
233
133
230
118
20
151
102
36
160
98
40
252
101
37
181
98
40
205
97
160
88
50
177
76
62
204
77
61
159
73
65
214
75
68
170
56
83
235
61
77
166
47
91
176
State Eq. Aid
Local Revenue
$100
$200
$300
$136
Revenue per ADM

Figure 5-3

Local Revenue Plus State Equalization Aid per ADM
Equalization Based on General Fund Plus Property



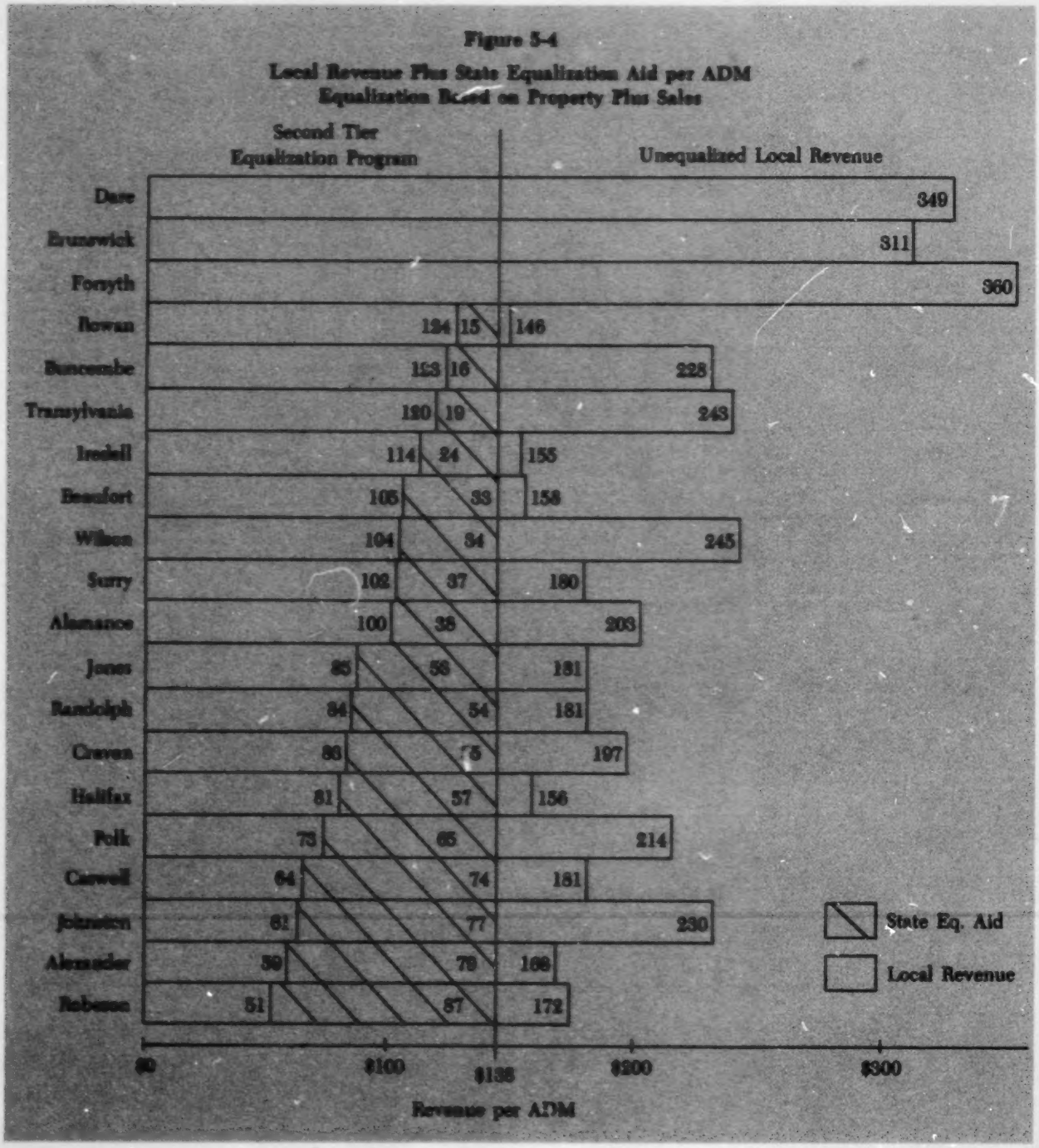


Figure 5-4
Local Revenue Plus State Equalization Aid per ADM
Equalization Based on Property Plus Sales
Second Tier Equalization Program
Unequalized Local Revenue
Dare 349
Brunswick 311
Forsyth 360
Rowan 124 15 146
Buncombe 153 16 228
Transylvania 120 19 243
Iredell 114 24 155
Beaufort 105 33 158
Wilson 104 34 245
Surry 102 37 180
Alamance 100 38 203
Jones 85 58 181
Randolph 84 54 181
Craven 83 75 197
Halifax 81 57 156
Polk 73 65 214
Caswell 64 74 181
Johnston 61 77 230
Alexander 59 79 168
Robeson 51 57 172
State Eq. Aid
Local Revenue
$0
$100
$138
$200
$300
Revenue per ADM

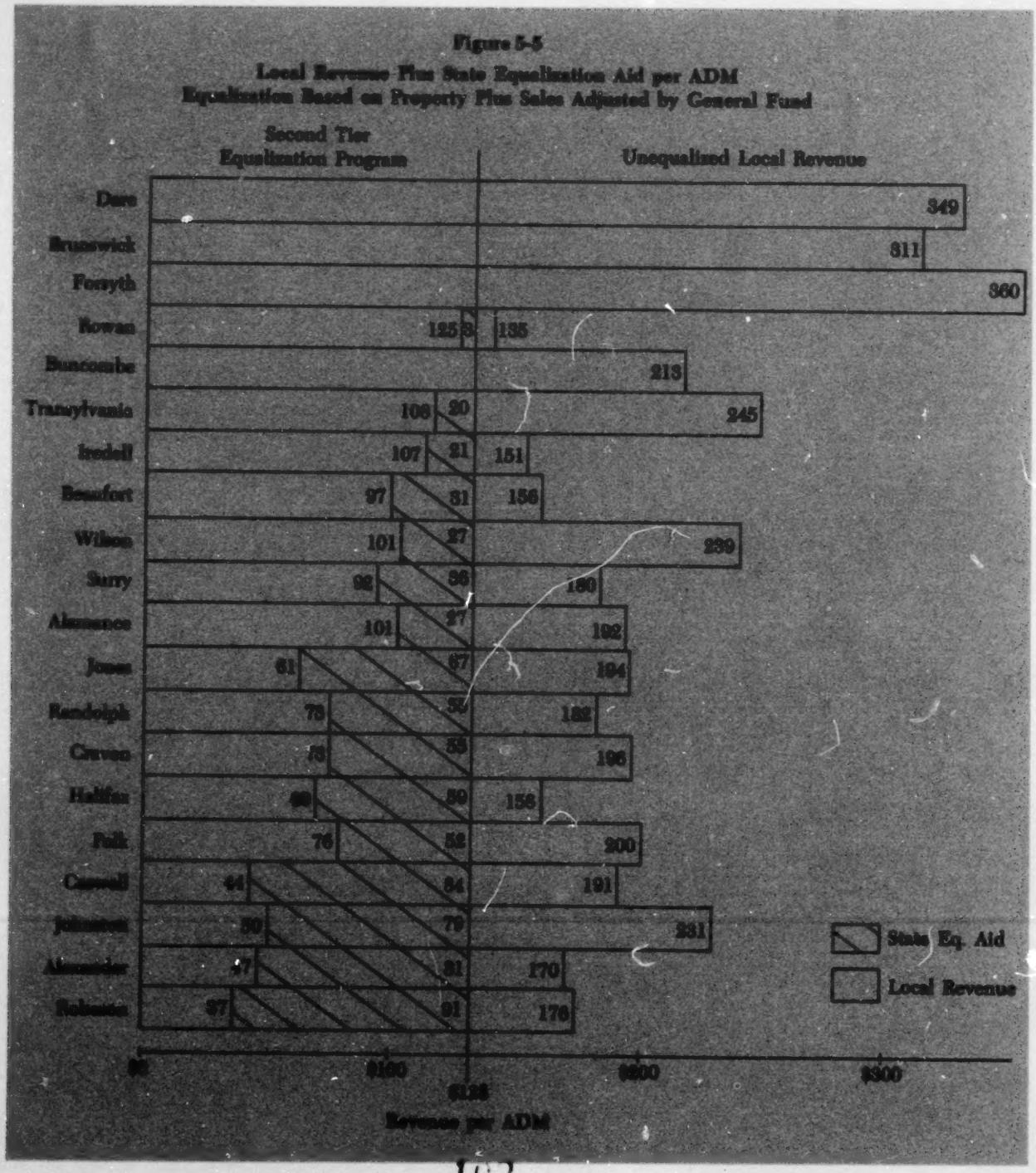


Figure 5-5
Local Revenue Plus State Equalization Aid per ADM
Equalization Based on Property Plus Sales Adjusted by General Fund
Second Tier
Equalization Program
Unequalized Local Revenue
Dare
Brunswick
Forsyth
Rowan
Buncombe
Transylvania
Iredell
Beaufort
Wilson
Surry
Alamance
Jones
Randolph
Craven
Halifax
Polk
Caswell
Johnston
Alexander
Robeson
349
311
360
125
135
213
109
20
245
107
21
151
97
31
156
101
27
239
92
36
180
101
27
192
61
67
194
75
57
182
78
55
196
89
50
156
76
52
200
44
84
191
30
79
231
37
81
170
37
91
176
$0
$100
$200
$300
$128
Revenue per ADM
State Eq. Aid
Local Revenue

Table 5-10

Distribution of Income Within Counties[1]
Wealthiest and Poorest Counties Based on General Fund Plus Property Index

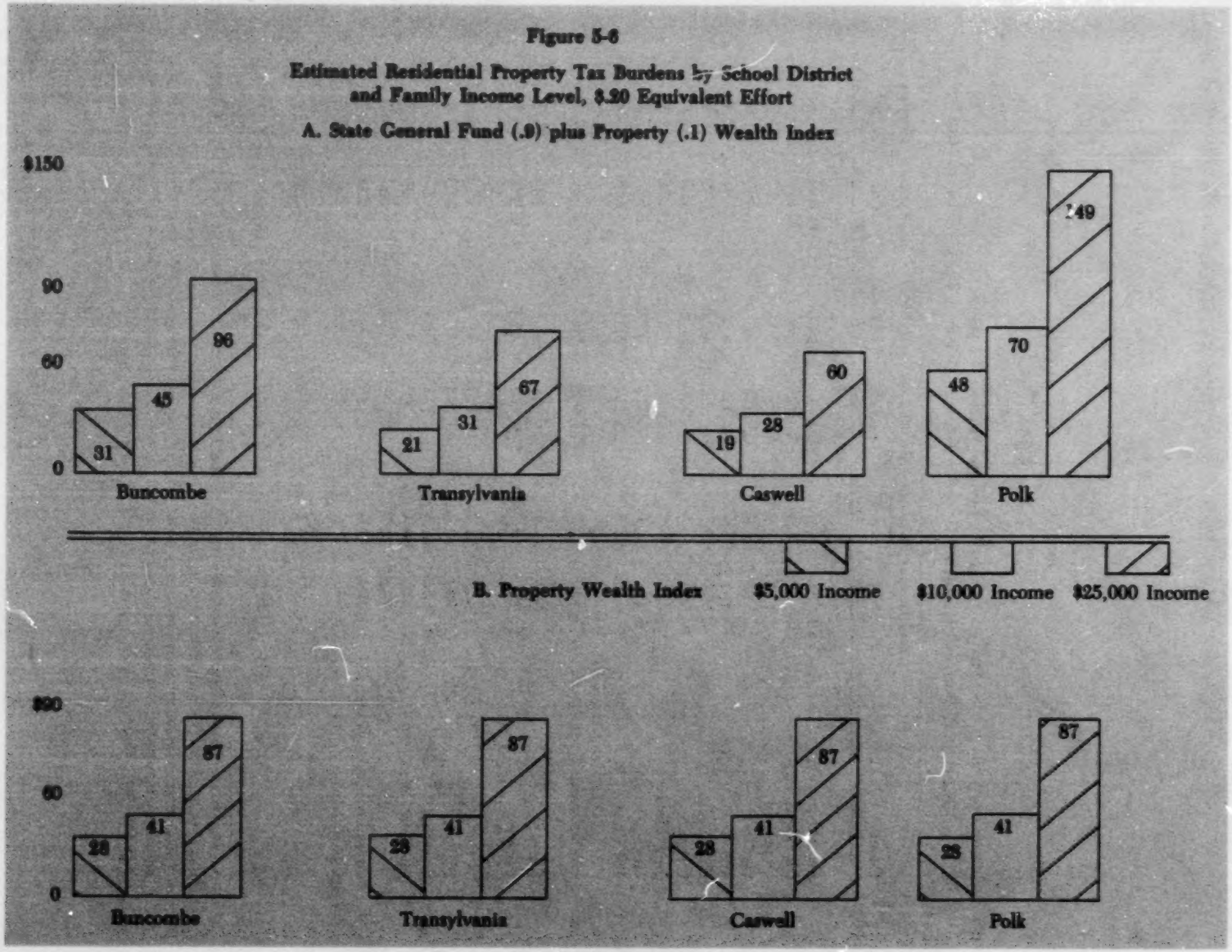
County	Low Income Returns		Middle Income Returns		High Income Returns	
	Number	Percent	Number	Percent	Number	Percent
Forsyth	24,288	31.6	39,290	51.2	13,215	17.2
Mecklenburg	35,473	29.9	59,008	49.7	24,300	20.4
Dare	1,013	44.0	1,153	50.0	139	6.0
Guilford	32,886	31.9	52,655	51.1	17,466	17.0
Wake	23,884	33.4	34,037	47.7	13,499	18.9
Durham	16,575	36.5	21,823	48.1	7,010	15.4
Catawba	10,590	31.4	18,951	56.3	4,135	12.3
New Hanover	9,524	36.6	13,296	51.1	3,206	12.3
Orange	5,445	37.1	6,674	45.5	2,551	17.4
Buncombe	18,221	35.7	26,954	52.9	5,815	11.4
High Wealth Districts	177,903	32.8	273,843	50.4	91,336	16.8
Gates	1,042	45.7	1,106	48.6	130	5.7
Robeson	11,231	50.7	9,570	43.1	1,388	6.2
Clay	835	53.1	687	43.6	52	3.3
Warren	2,023	54.8	1,535	41.1	172	4.6
Haden	3,709	50.8	3,199	43.8	390	5.3
Camden	624	43.6	715	50.0	92	6.4
Pamlico	440	46.3	450	47.4	60	6.3
Hoke	1,254	37.5	1,725	51.5	367	11.0
Greene	1,518	47.9	1,418	44.7	234	7.4
Caswell	1,864	46.0	1,772	43.5	201	5.5
Low Wealth Districts	24,885	49.1	22,179	44.7	3,086	6.2
State Total	591,795	37.1	815,366	51.3	181,398	11.4

Source: Dewey Stollar and Gerald Boardman, *Personal Income by School Districts in the United States* (Gainesville, Fla.: National Educational Finance Project, 1971).

[1]Based on federal income tax returns for 1966 filed during calendar year 1967. Low, middle and high returns were classified based on adjusted gross income below $3,000, between $3,000 and $10,000, and over $10,000, respectively.

Figure 5-6

Estimated Residential Property Tax Burdens by School District and Family Income Level, $.20 Equivalent Effort



differences in housing costs because the objective of the study was to compare tax burdens among locations for model families with the same income size and expenditure pattern. Estimates were made of the incidence of "equal effort" (general fund plus property given previously in Table 5-7) on model families in Buncombe, Transylvania, Caswell, and Polk counties, using the house values suggested by Lile. These estimates are shown graphically in Figure 5-6. Since taxpayers in Polk and Buncombe counties were required to pay rates of $0.3415 and $0.2200, respectively, their tax bills were higher at all income levels than those in Transylvania and Caswell counties, where tax rates were $0.1536 and $0.1373, respectively. In fact, low income taxpayers in Polk and Buncombe counties were required to pay a greater total tax bill than medium income taxpayers in Caswell County to obtain the $139 per ADM guarantee level. From this model it is apparent that use of the general fund plus property index in measuring local fiscal capacity would lead to distortions violating vertical and horizontal equity standards for taxation. The local capacity measures reflecting actual access to locally taxable resources, on the other hand, would not create such inequities.

Conclusions

The analysis conducted in this chapter indicated that any of the four alternative local fiscal capacity measures, if employed in an equalization formula, could substantially reduce the current disparity among districts in local revenue per ADM. It is appropriate to use a measure of wealth which reflects the tax bases actually available to county governments. Since neither sales nor property tax measures adequately reflect such important economic indicators as incomes, it seems important to include information on the general fund contribution coming from each county. The property plus sales index adjusted by general fund wealth is the recommended alternative because it provides for the broadest measure of the economic resources available in each county. Since considerable diversity exists among counties in the ratio of assessed valuation to true valuation of property, implementation of a fiscal equalization program will require that sales ratio studies or similar techniques be employed to provide for improved taxpayer equity. Therefore, the Commission recommends:

A state school finance system that provides equal educational opportunity to all children, taking into account legitimate program costs and variations in fiscal ability among local administrative units, through continuation of a *Basic Aid Fund* and the establishment of an *Equalization Fund*.

That the state, in order to gauge effort against ability, measure local fiscal capacity by a property-sales tax formula, modified by an adjusted general fund contribution factor.

That the Legislature, in order to maintain essential equity among property taxpayers, require the Department of Revenue to perform annual sales-assessment ratio studies and to certify an appropriate level of property valuation for each county.

References

Advisory Commission on Intergovernmental Relations. *Measures of State and Local Fiscal Capacity and Tax Effort*. Washington, D.C.: U.S. Government Printing Office, 1962.

Alexander, K., and Kay, H. "The Nature of School District Fiscal Effort in Kentucky." *Financing the Public Schools of Kentucky*. Gainesville, Fla.: National Education Finance Project, 1973.

Benson, C.S. *Final Report to the Senate Select Committee on School District Finance* (Vol. 1). Sacramento, Calif.: The Committee, 1972.

Benson, C.S. *Education Finance in the Coming Decade*. Bloomington, Ind.: Phi Delta Kappa, 1975.

Benson, C.S. *The Economics of Public Education*. Boston: Houghton Mifflin, 1978.

Burke, A.J. *Financing the Public Schools in the U.S.* (Rev. ed.). New York: Harper & Brothers, 1957.

Clune, W.H., III. "Wealth Discrimination in School Finance." *Northwestern University Law Review*, 1973, 68, 681-682.

Cornell, F.G. *A Measure of Taxpaying Ability of Local School Administrative Units*. New York: Teachers College, Columbia University, 1936.

Cubberley, E.P. *School Funds and Their Apportionment*. New York: Teachers College, Columbia University, 1906.

Davis, D.L. *Taxpaying Ability: A Study of the Relationship Between Wealth and Income in California Counties*. Doctoral Dissertation, Stanford University, 1963.

Farner, F., and Edmondson, J. *Relationship of Principle Tax Bases for Public School Support in the Counties of the Eleven Western States*. Eugene, Ore.: Bureau of Educational Research and Service, University of Oregon, 1969.

Gensemer, B. *Personal Income Variations Among Ohio School Districts and Their Implications for the Guaranteed-Yield Formula*. Columbus, Ohio: Education Review Committee, Ohio General Assembly, 1976.

Herber, B.P. *Modern Public School Finance: The Study of Public Sector Economics*. Homewood, Ill.: Irwin, 1971.

Hickrod, G.A., and Hubbard, B.C. *Illinois School Finance Research: Some Knowns and Unknowns*. Chicago: Midwest Administration Center, University of Chicago, 1977.

Hickrod, G.A., and Sabulao, C.M. *Increasing Social and Economic Inequalities Among Suburban Schools*. Danville, Ill.: Interstate, 1969.

Hickrod, G.A., Yang, T.W., Hubbard, B.C., and Chaudhari, R. *Measurable Objectives for School Finance Reform: A Further Evaluation of the Illinois School Finance Reforms of 1973*. Normal, Ill.: Illinois State University, 1975.

James, H.T., Kelly, J.A., and Garms, W.I. *Determinants of Education Expenditures in Large Cities of the United States*. Stanford, Calif.: School of Education, Stanford University, 1966.

James, H.T., Thomas, J.A., and Dyck, H.J. *Wealth, Expenditure, and Decision-Making for Education*. Stanford, Calif.: School of Education, Stanford University, 1963.

Johns, R.L. *An Index of the Financial Ability of Local School Systems to Support Public Education*. Montgomery, Ala.: Alabama State Department of Education, 1938.

Johns, R.L. "Local Ability and Effort to Support Schools." *Problems and Issues in School Finance*. R.L. Johns and E.L. Morphet (Eds.). New York: National Conference of Professors of Educational Administration, 1952.

Johns, R.L. "Alternative State School Finance Plans." *Financing Education: Fiscal and Legal Alternatives*. R.L. Johns, K. Alexander, and K.F. Jordan (Eds.). Columbus, Ohio: Merrill, 1972.

Johns, R.L., and Kimbrough, R.B. *The Relationship of Socioeconomic Factors, Educational Leadership Patterns and Elements of Community Power Structure to Local School Fiscal Policy*. Washington, D.C.: U.S. Office of Education, 1969.

Johns, R.L., and Morphet, E.L. *The Economics and*

Financing of Education: A Systems Approach (3rd ed.). Englewood Cliffs, N.J.: Prentice-Hall, 1975.

Lile, S.E. *Family Tax Burdens Compared Among States and Among Cities Located in Kentucky and Neighboring States*. Frankfort, Ky.: Kentucky Department of Revenue, 1975.

Mill, J.S. *Principles of Political Economy*. New York: Appleton, 1893.

Moore, D.O. "Local Nonproperty Taxes for Schools." *Status and Impact of Educational Finance Programs*. R.L. Johns, K. Alexander, and D.H. Stollar (Eds.). Gainesville, Fla.: National Educational Finance Project, 1971.

Morrison, H.C. *School Revenue*. Chicago: University of Chicago Press, 1930.

Mort, P.R. *State Support for Public Education*. Washington, D.C.: The American Council on Education, 1933.

Mort, P.R., and Reusser, W.C. *Public School Finance*. New York: McGraw-Hill, 1941.

North Carolina Department of Revenue. *Statistics of Taxation 1976*. Raleigh, N.C.: Tax Research Division, The Department, 1976.

Odden, A. "Alternative Measures of School District Wealth." *Journal of Education Finance*, 1977, 2, 356-379.

Odden, A. "Missouri's New School Finance Structure." *Journal of Education Finance*, 1978, 3, 465-475.

Rossmiller, R.A., Hale, J.A., and Frohreich, L.E. *Fiscal Capacity and Educational Finance: Variations Among States, School Districts and Municipalities*. National Education Finance Project Special Study No. 10. Madison, Wis.: Department of Educational Administration, University of Wisconsin, 1970.

Stollar, D.H., and Boardman, G. *Personal Income By School Districts in the United States*. Gainesville, Fla.: National Education Finance Project, 1971.

Strayer, G.D., and Haig, R.M. *The Financing of Education in the State of New York*. New York: MacMillan, 1923.

Tron, E.O. *Public School Finance Programs, 1975-76*. Washington, D.C.: U.S. Government Printing Office, 1976.

Weilmuenster, D. *Introduction to Fiscal Equalization: Issues, Mechanics, and Preliminary Simulation Results*. Raleigh, N.C.: Governor's Commission on Public School Finance, 1978. (Mimeographed)

Wilde, J. *Revisions in Property Data*. Raleigh, N.C.: Governor's Commission on Public School Finance, 1978. (Mimeographed)

Yang, T.W., and Chaudhari, R. *A Study of the Relationship Between Selected Socioeconomic Variables and Local Tax Effort to Support Public Schools in Illinois*. Normal, Ill.: Center for the Study of Education Finance, 1976.

Chapter 6

Providing for Educational Needs And Program Costs

The primary intent of public elementary and secondary school finance legislation is to provide adequate programs of instruction to meet the educational needs of children. It is accepted that educational needs of children vary in relation to their physical, psychological, and emotional maturity. Given the variance among pupil needs and instructional tasks, the state public school finance plan should establish funding mechanisms that accommodate these variations in both an adequate and efficient manner.

The number of children having similar educational needs varies among school districts, and the costs associated with programs designed to meet those needs also vary. It is generally recognized that an adequate program (equal educational opportunity) cannot be defined by simply allocating equal numbers of dollars per pupil. Results of research conducted in North Carolina indicate that the state of North Carolina should recognize differential program costs.

In 1975-76 twenty-three states recognized broad categories of weighted pupil units for funding purposes while nine states weighted pupil units for funding according to specific program areas (Tron, 1976). Some of those states and others recognized teacher training and experience as a further modifying factor to determine resource needs of school districts; six states defined resource needs in terms of classroom instruction units. The weighted pupil funding unit, or its mathematical equivalent translated into a weighted classroom unit is, according to Mort and Reusser (1951), "the most systematically refined of all measures of educational need" included in state school finance plans and analytical analyses of school finance plans (p. 491).

Four principal strengths of the weighted pupil/weighted instructional unit approach to school support are: (a) an integration of the instructional program structure into a cohesive, interrelated mechanism, (b) program area budget/expenditure visibility versus functional/object accounting categories or nondescriptive pupil accounting variables, (c) compatibility with planning-programming-budgeting-evaluating management designs; and (d) creation of staff awareness of budgetary considerations.

The program structure discussed in this chapter represents an integrated funding relationship among instructional program areas. The results of the pupil cost study have been translated into weighted instructional units as the base support unit. Grades 4 through 8 have been designated as the base program against which weighted relationships were established for other program areas. This methodology is more accurately classified as a weighted classroom instructional unit. All instructional and some support costs which are required for that operating unit are contained in the base allocation. However, it is more efficient not to prorate several support services to that base funding unit but to fund them separately as categorical support (e.g., transportation, food service, capital outlay and debt service, among others). Such modifications have been made to the extent that instructional delivery system variables remain—pupil/teacher ratios, support personnel services, instructional materials and purchased services, and supplies.

Issues relative to pupil accounting methods are addressed and then program structure and funding relationships among program areas are discussed. Although the basic support allocation will be related to the instructional unit the basis upon which instructional units are determined is the pupil. Therefore, pupil accounting becomes the primary unit of analysis.

Pupil Accounting

The current method of accounting pupils by ADM in the basic instructional, exceptional, and vocational program areas should be continued. Further, the State Board of Education should be responsible for approving funding units for exceptional children served part-time and these units

should be in addition to the basic funding program.

The intent is to establish the pupil accounting method more reflective of service demands of instructional programs. Although the FTE method reported in the program cost study and used in other states may be marginally superior to the proposal stated here, the "add-on" for program area providing services to exceptional children will closely approximate the FTE method. The "add-on" method for program areas circumvents some criticisms associated with the detailed FTE pupil accounting method. However, the instructional unit recommendation for the kindergarten program assumes full-day average daily membership since North Carolina operates full-day programs.

Finally, the present method of funding current year expense should be continued. Preliminary monthly distributions based on ADM projections should begin July 31 for the current fiscal year with adjustments at the end of 40 school days and then at the end of 120 school days. Should, however, experience demonstrate that final adjustments in basic and vocational program areas may be made prior to 120 school days, an earlier date may be selected (e.g., 80 or 100 days) since districts must reprogram expenditures at the time adjustments are made in the monthly state aid allocation.

The discussion that follows is made with regard to the structure of public elementary and secondary school support. The structure includes basic education program units; "add-on" units for exceptional children, gifted and compensatory, and vocational programs; adjustments for training and experience of teachers and essential, isolated schools; and, a hold-harmless provision.

The chapter which presents the costs of educational programs demonstrated clearly that the FTE pupil costs of educational programs in North Carolina, like other states, vary widely. Also, that chapter presented, for the sample districts, the relationships of FTE pupil costs between selected programs. The described structure is *not* one of a weighted pupil basis support but represents an integration of the current instructional unit basis, modified to reflect more clearly cost relationships found in North Carolina and other states. It was necessary to translate FTE pupil costs differentials into instructional unit differentials based upon ADM pupil accounting. Further, since the described structure includes "add-on" units for exceptional children, gifted and compensatory, and vocational programs based on ADM pupil accounting, the instructional unit relationships must reflect the fact that some double pupil accounting is made. An example is given under the title "Add-On" Instructional Units. The number chosen for the basis for relating instructional units was 27 pupils in ADM in grades 4-8. This figure seemed to be a reasonable basis for establishing program support relationships.

Given that the suggested ratios relate to structure, it is assumed that the specific numerical values utilized will be further tested for their rational basis by the Department of Public Education and evaluated more fully given operational experience. However, based on the North Carolina cost study and numerous other studies of states and national samples, the values utilized in the structure would seem to have substantive merit. Policy intervention is reflected in several of the programs for purposes of upgrading instructional activities; and, therefore, the suggested funding levels of several programs may not relate directly to the cost study findings (e.g., grades 1-3).

Basic Education Programs

Kindergarten Through Grade 3

Except for shared time for special education services, children in this basic program receive all their instruction from specialists serving these grades. Irrespective of the child's shared time in special services, the child enrolled in kindergarten through grade 3 would be counted for funding purposes in this program. In North Carolina 22.3 FTE students

per FTE teacher were found for grade levels 1 through 3.

Although 26 FTE kindergarten children were found per FTE kindergarten teacher in the cost study sample of North Carolina school districts, those programs also included kindergarten aides and other supportive services. Determination of instructional units would be made as follows:

1. Sum number of ADM pupils in state approved kindergarten programs and grades 1-3.
2. Divide the sum in #1 by 27.
3. Multiply the quotient in #2 by the factor (1.23) for kindergarten and grades 1-3.

Grades 4 Through 8

This basic education program area represents those children placed for instructional purposes in any one of grades 4 through 8. All other programs relate to this base program in weighting instructional units. The number of FTE pupils per FTE teacher in North Carolina was 22.3. However, this number (22.3) represents full-time equivalent memberships after identifying the exceptional child program area full-time equivalent participants. Current statute utilized various pupil-teacher ratios for funding purposes. Since exceptional child programs will be recommended "add-on" units, the number of 27 pupils in ADM is for funding purposes. Determination of instructional units would be made as follows:

1. Sum number of ADM pupils in grades 4-8
2. Divide the sum in #1 by 27.

Grades 9 Through 12

This basic education program area represents those students referred to as secondary school enrollments. A student who participates in instruction in the district's program areas at least one-half day and is enrolled in any one of grades 9 through 12 would qualify for membership in this basic education program. The FTE pupil/teacher ratio in the cost study sample for this program area was 21.4 to 1. For funding purposes, an instructional unit for this program area would be determined as follows:

1. Sum number of ADM pupils in grades 9-12.
2. Divide the sum in #1 by 27.
3. Multiply the quotient in #2 by the grades 9-12 factor (1.23).

"Add-On" Instructional Units

The program areas for vocational education and exceptional children require adjustments to ADM pupil accounting to reflect the additional time spent in the program area for instruction and/or services. The intent is to "add-on" to the number of instructional units earned in the basic program areas the appropriate number of instructional units representative of the added costs of this instruction for school districts.

Under current law, both vocational education and exceptional child education are not funded in the same manner as the basic program areas. The "add-on" approach is consistent with the approach for the basic program areas in that instructional unit definitions are established for each program area in terms of ADM. These additional definitions are reflective of the program area costs in relation to the grades 4 through 8 program area costs. Several calculation methods could be used to establish the appropriate relationships of the various special program areas to the grades 4 through 8 base program. The method described below is suggested; however, any mathematical equivalent would be appropriate.

First, all students except TMR are counted for funding purposes in one of the basic program areas according to their grade level assignments. (Because of the full-time placement of the TMR children in the exceptional education program, the weighted instructional unit was adjusted and the pupils are counted in that program only.) Second, the ADM in each of the vocational "add-on" program areas is adjusted by the average propor-

tional time spent during the school day in that instructional program and then related to the recommended number of ADM pupils to obtain the weighted instructional units for funding purposes. For the exceptional children program areas, caseloads per instructional unit (resource room, itinerant, etc.) were determined and similarly translated into a weighted instructional unit. A caseload represents the number of student contacts per teacher per day except the speech program which represents the number of student contacts per week. Consider two examples:

1. A district has 90 secondary level students in ADM enrolled in vocational agriculture courses for one period per day (0.2 of the school day). First, the basic program area would have earned 4.10 instructional units [(90 ÷ 27) × 1.23].
   Second, the agriculture program area would earn 1.00 instructional unit [(90 ÷ 27) × 0.30].
2. A district has 15 TMR students in ADM full-time (1.0 day) in the instruction program area. The TMR program area would have earned 3.00 instructional units [(15 ÷ 27) × 5.40].

The adjustments used for simulating the impact of vocational programs were those reported in the cost study as average time spent in programs for instructional purposes. Therefore, the duplicated ADM by program area reported by the vocational education division would provide the best basis for statewide projections. Individual teacher ADM reports would provide the appropriate audit trial for district claims.

Finally, given the data base available, program areas for exceptional children are based on significantly measurable individual differences. However, through the caseload definitions an attempt was made to approximate the service delivery systems which are more appropriate bases for funding those services. Although as many as ten delivery options have been observed in other states over a wide range of exceptionalities, such a detailed approach is not indicated for North Carolina at this time. However, should the state generate sufficient longitudinal data to establish such a basis, then a study should be done for policy determination in this area. Education funding should follow pupil need and, in the latter instance, pupil need is made manifest by service delivery option provided (a redefinition of program area).

Programs for Exceptional Children

Students assigned to programs for exceptional children must have received appropriate assessment, evaluation, and due process in accordance with standards established by the State Board of Education. For purposes of planning and orderly growth of these programs to better serve the children of North Carolina, the total number of "add-on" instructional funding units should be calculated annually until such time as full service is available. Approximately 4,600 exceptional child instructional units would need to be funded the initial year. Federal appropriations could be used to expand these services.

Table 6-1 compares the FTE students per full-time equivalent teacher found in the program cost study of a sample of North Carolina school districts with the recommended caseloads which were translated into weighted instructional units for purposes of determining "add-on" units. The two columns of figures are independent of each other in that there is no direct relationship between them. However, in each case, the teacher-pupil ratio (FTE or ADM) is not specified as to the amount of time that such a student would receive special instruction.

Further, a post-audit analysis of expenditures should be performed after two years of use for purposes of evaluating the adequacy and efficiency of this funding design and for making appropriate adjustments in the caseloads for funding purposes.

Gifted and Compensatory

Programs for the gifted and talented should be further examined since cost data from this program

Table 6-1

Comparison of Program Cost Study Findings of FTE Pupils per Teacher with Recommended "Add-On" Caseloads

Exceptional Children	Cost Study FTE Pupils per Teacher	Recommended Caseload ADM
Educable Mentally Retarded	11.0	20
Trainable Mentally Retarded	11.1[1]	5
Learning Disabilities	10.2	20
Emotionally Handicapped	6.5	10
Physically Handicapped	10.1	10
Visually Handicapped	10.0[2]	5
Hearing Impaired	6.6	10
Speech Impaired	7.7	60
Hospitalized/Homebound	5.4	10
Gifted and Talented	25.0	27

[1]Plus aide.
[2]One program only.

are being reviewed by state representatives regarding policies and funding. "Add-on" units for this program should be based on "program approval" by the Department of Public Instruction in accordance with the State Board of Education regulations. In the cost study sample, an average FTE pupil/teacher ratio of 25 to 1 or factor of .05 was found for programs serving gifted students.

An average FTE pupil/teacher ratio among compensatory education programs was found to be 9 to 1. Further study should be made of this program area to determine needs not served by ESEA Title I. Criteria such as reading and/or general achievement levels should provide the basis for need as opposed to economic criteria utilized by Title I. This program area does not have a funding factor at this time.

Vocational Education

Since passage of the Smith-Hughes Act of 1917, the federal government has played an increasing role in the development of new vocational education offerings. Vocational educators recognize that occupational competency is related to specialized vocational skills, general education skills, and personal attributes. Therefore, vocational education is not seen as separate and apart from the secondary school's general education program area and its supportive services.

In Table 6-2, the findings of FTE pupil/teacher ratios in vocational program areas among the sample of North Carolina school districts are compared with the recommended ADM for purposes of computing "add-on" vocational instructional units.

For program planning purposes and for orderly expansion of relevant secondary level vocational

Table 6-2

Comparison of Program Cost Study Findings of FTE Pupils per Teacher with Recommended ADM for "Add-On" Purposes

Vocational Program Area	Cost Study FTE Pupils per Teacher	Recommended ADM per Class Period for "Add-On" Units
Agriculture	18.3	18
Distributive	29.9	20*
Health Occupations	14.9	15
Home Economics	18.8	19
Business/Office	17.8	18
Technical	16.7	17
Trades/Industrial	16.7	17

*The North Carolina sample finding for Distributive programs is somewhat higher than other state studies; therefore, it is recommended 20 ADM per class period per teacher.

programs, the number of "add-on" units for funding should be annually calculated. It is expected that approximately 3,000 vocational instructional units would need to be funded during the initial year, and an appropriate amount of the regular federal vocational funds should be included in support of those units. Finally, after two years' experience with this funding design, cost studies of each vocational program area should be done for purposes of evaluating the adequacy and efficiency of program funding.

Adjustments to Program Units

Training and Experience of Teachers

This study also included the classification of teachers relative to their professional training and experience. A matrix was constructed for each school district and the teachers were classified. The resulting 25 categories (5 for levels of training and 5 for levels of experience) were weighted and an index was computed for each district. The index is a simple ratio of the sum of the number of weighted categories divided by the sum of the number of teachers. The lowest training and experience (T & E) ratio computed was 0.972 in Hyde school district while the highest T & E ratio was found to be 1.051 in Watauga. The state median T & E index was 1.005.

The inclusion of an adjustment to Instructional Units by the district's T & E index is based on two issues. First, districts pay individual teachers according to their training and experience and, therefore, create a demand upon the salary budget. The state has traditionally reinforced this practice through its differential teacher salary support in the foundation program. The second issue evolves from the fact that the training and experience of teachers impact school districts differentially. The range of the computed T & E ratios was 0.079, creating systematic differences in resource demands that should be reflected in the definition of resource needs. Further, districts would not be fiscally penalized when employing the best trained and/or more experienced teachers for open positions. Therefore, the Commission recommends:

> That professional educators from each local administrative unit be classified in accordance with professional training and experience, utilizing a *Training and Experience Matrix* with the *Basic Aid Fund*. An index computed from the categories of the *Matrix* should be computed for each local administrative unit and should serve as a basis for state funding.

Essential, Isolated Schools

The current funding strategy in North Carolina tends to support small school districts through a number of state distributed funds; for example, board and superintendents' expenses. Only essential, isolated schools should be the target of fiscal adjustment and not small districts, since small districts may be consolidated into more efficient operating units.

The State Board of Education should develop criteria for designation of such essential, isolated schools. These criteria should include such factors as: geography (accessibility), transportation (time and distance), and other health and safety considerations. These schools so designated should be classified as either elementary (highest grade level to include 8th grade) or secondary (grade levels to include 9-12). Each such school would be classified according to the highest grade level membership.

For purposes of determining "add-on" funding units for school districts having such designated schools, the following procedures should be followed:

1. An approved essential, isolated elementary school offering basic instructional programs would receive "add-on" units determined as follows:

$$\frac{200 - \text{ADM}}{200} \times 1.00 \times \frac{\text{ADM}}{22} = \text{"add-on" units}$$

2. An approved essential, isolated secondary school offering basic instructional programs would receive "add-on" units determined as follows:

$$\frac{200 - \text{ADM}}{200} \times 2.00 \times \frac{\text{ADM}}{22} = \text{"add-on" units}$$

Therefore, the Commission recommends:

That the State Board of Education adopt regulations specifying criteria for essential, isolated schools. Upon Board approval, local administrative units with qualifying schools should be allocated "add-on" weighted classroom instructional units in accordance with adopted formulas for elementary schools and for secondary schools.

Hold-Harmless

If the above proposal results in less state aid to any school district relative to that school district's state revenues for the previous year, then such school districts should be held harmless from loss of state revenues. The amount of hold-harmless distribution would be the difference between the amount of a district's state aid determined by the recommended plan and an amount representing the state aid that district received the previous year plus 3 percent for nonsalary inflationary pressures. Therefore, the Commission recommends:

That the state, through a policy of fiscal equalization, make educational programs more equally accessible to all children regardless of where they live or the economic condition of their parents or community. To that end, we recommend that the state establish an equalization fund and require local effort for participation. A hold-harmless provision should be implemented to assure that no local administrative unit would initially receive less state funds from the *Basic Aid Fund* plus the *Equalization Fund* than it did in the year immediately preceding implementation of the weighted instructional unit.

Summary of Units

The funding needs of a local school district under this plan would be determined by summing basic instructional units, "add-on" exceptional child instructional units, "add-on" vocational instructional units and multiplying that sum by the training and experience ratio for that district's teachers.

In addition to instructional units required in basic programs, exceptional children, and vocational education, provision should be made for additional "add-on" units necessary to meet the needs of essential, isolated schools. The total units would be funded by specifying a basic support level (i.e., a flat amount per instructional unit). Local funds may then be used to create additional instructional units as to supplement existing instructional units. (It should be noted that instructional unit costs *do not* include costs for pupil transportation.)

Simulated Alternatives

A research and development product of this study was a computer-based North Carolina public elementary and secondary education finance simulation model. Data for all 145 school districts are included in the model.

Two alternative school support plans have been simulated and are presented here to clarify equalization issues and to demonstrate how those issues impact North Carolina school districts. Further, these plans and other analyses, which are illustrative and definitive, provide the basis of several recommendations regarding the equalization of school support. The plans are typical of the analyses supported by the simulation model and

definitive in that any alteration in one or more of the decisions, or the inclusion of one or more other decisions, will alter the impact upon school districts. For purposes of discussion the plans are simply designated as Plan A and Plan B. The impact of the alternative state school support plans on selected school districts is demonstrated in Tables 6-3, 6-4, and 6-5. The sample districts were selected to represent variations in local wealth, geographic location, and enrollment size across the state of North Carolina.

The common elements of both plans are the decisions regarding ADM pupil accounting and the number of pupils by program that constitute an Instructional Unit. Those common decisions are as follows:

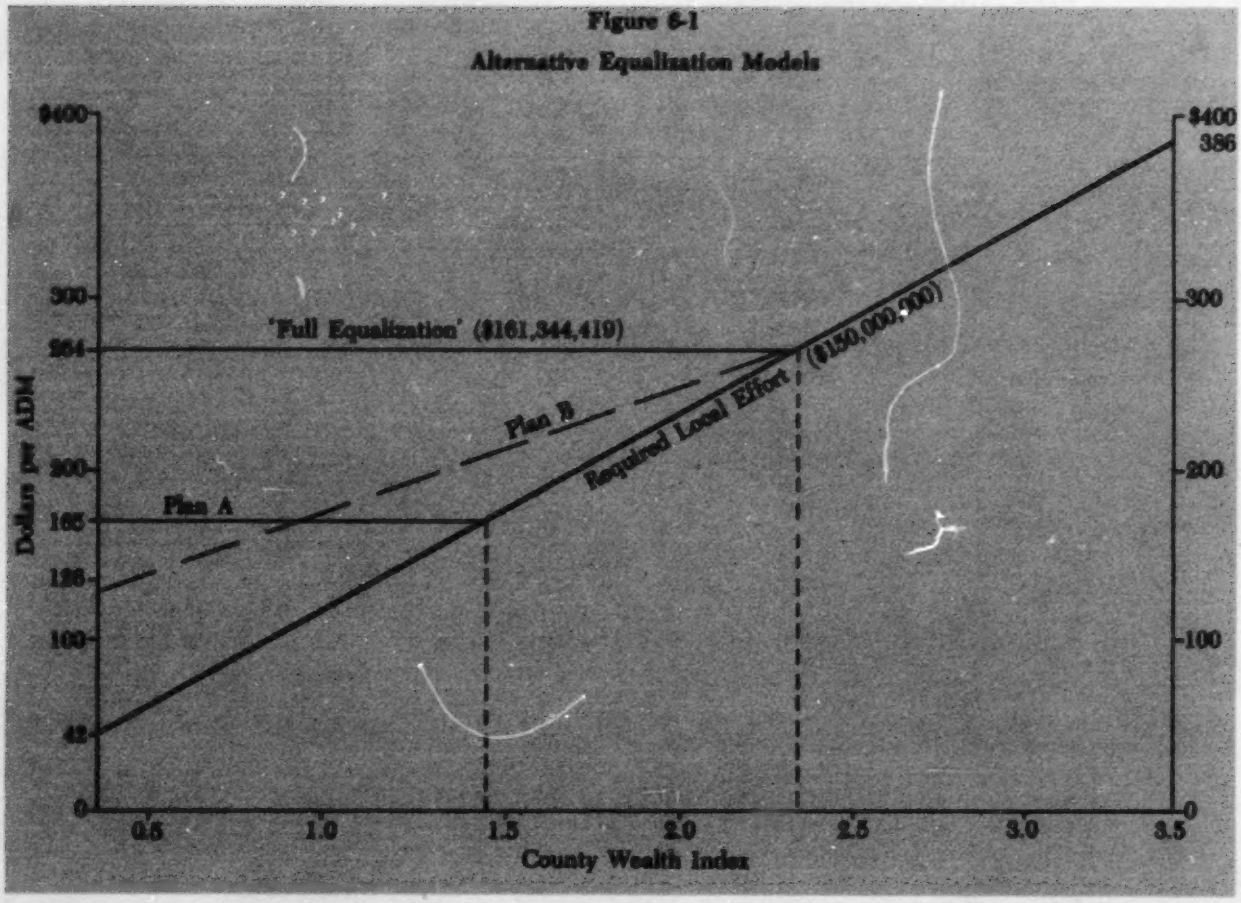
ADM ÷ 27 × Weighted Factor = Weighted Instructional Unit.

The amount of the basic state program was defined as the 1976-77 sum of the foundation, vocational, and trainable mentally retarded distributions—$863,103,908. For each alternative the basic program amount was the same; however, the simulations redistributed those dollars based on defined pupil needs. The average support per instructional unit was approximately $14,553 based on the total of $863,103,908. The level of state support per instructional unit was adjusted for each district to reflect variations in teacher training and experience; support levels ranged from a high of $15,221 in Watauga to a low of $14,080 in Hyde.

Given the basic distribution fully funded at the state level, the two alternatives address the issues of equalizing local revenues through a "second tier" equalization program. The structure of the equalization methods is illustrated in Figure 6-1. Each alternative is based on a required local effort of $150 million statewide, apportioned among districts in direct relation to local fiscal capacity. Local fiscal capacity is measured by the property plus sales measure of local fiscal capacity adjusted to reflect variations among counties in general fund ability. Local effort per pupil in ADM required for participation in the second tier equalization program ranged from a high of $386 in Dare, the wealthiest county (3.480 wealth index) to a low of $42 in Pamlico, the poorest county (0.376 wealth index). The selected effort level is below the actual 1975-76 effort of 92 counties. As such it would require only eight counties to increase local effort to qualify for participation in the equalization program. The cost of a state program to fully

	Pupil/Teacher Ratio per Unit*	Weighted Instructional Unit
Basic Program Instructional Units		
Kindergarten	22	1.23
Grades 1-3	22	1.23
Grades 4-8 (Base for all units)	27	1.00
Grades 9-12	22	1.23
"Add-on" Exceptional Children Caseloads		
Educable Mentally Retarded	20	1.35
Trainable Mentally Retarded	5	5.40
Learning Disabilities	20	1.35
Emotionally Handicapped	10	2.70
Physically Handicapped	10	2.70
Visually Handicapped	5	5.40
Hearing Impaired	10	2.70
Speech Imparied	60	0.45
Hospitalized/Homebound	10	2.70
"Add-on" Vocational Instructional Units		
Agriculture	18	0.30
Distributive	20	0.27
Health	15	0.36
Home Economics	19	0.28
Business/Office	18	0.30
Technical		0.32
Trades/Industrial	17	0.32

*The above pupil/teacher ratios were found in units used for research purposes only and are not necessarily the funding units used when the plan is implemented.



equalize this required local effort at the 98th percentile wealth level (2.400 wealth index) would be $161,344,419. Such a program would guarantee each district $264 per ADM from a uniform effort in relation to local wealth totaling $150 million statewide. All counties but the two wealthiest, Dare and Brunswick, would qualify for state equalization aid. Given the limited availability of state dollars, full implementation of the second tier equalization program is probably not feasible at this time. The more moderate state support level of $60 million was assumed for simulation purposes.

Plan A. This plan allocates all state equalization dollars to the poorest districts first and levels up to a certain guaranteed revenue figure. Based on a $60 million state equalization distribution, $165 per ADM would be guaranteed from the required local effort plus state equalization funds. State dollars would be directed to counties with wealth indices below a cutoff level of 1.483. Twelve counties would not receive state equalization aid: Dare, Brunswick, Mecklenburg, Forsyth, Macon, Catawba, New Hanover, Wake, Guilford, Durham, Orange, and Stokes.

Table 6-3

Simulated State and Local Revenue per Instructional Unit
Equalization Plan A[1]

District	State Basic Program	Second Tier		Local Leeway	Hold-Harmless	State/Local Total
		Required Local	State Equalization			
Dare	$14,251	$7,472	$ 0	$ 0	$695	$22,418
Brunswick	14,436	5,880	0	0	218	20,096
Forsyth	14,742	4,747	0	2,257	0	21,746
Rowan	14,547	2,989	425	305	23	18,289
Buncombe	14,590	2,968	328	1,185	0	19,066
Transylvania	14,480	2,331	753	1,140	0	18,665
Iredell	14,544	2,508	833	675	0	18,560
Beaufort	14,568	2,135	999	953	0	18,655
Wilson	14,645	2,264	945	1,354	0	19,209
Surry	14,427	2,109	1,153	503	0	18,193
Alamance	14,575	2,380	974	1,622	0	19,551
Jones	14,543	1,342	1,778	1,185	0	18,823
Randolph	14,376	1,711	1,621	997	0	18,705
Craven	14,551	1,591	1,501	1,044	0	18,687
Halifax	14,517	1,442	1,545	916	0	18,420
Polk	14,659	1,668	1,450	1,484	246	19,501
Carroll	14,480	982	2,309	941	0	18,621
Johnston	14,492	1,112	2,084	1,851	0	19,539
Alexander	14,446	1,149	2,319	790	0	18,704
Robeson	14,405	828	2,355	1,045	0	18,632

[1]Statewide totals are $686,103,903 for state basic program, $150,000,000 for required local effort, $60,000,000 for state equalization, and $6,685,157 for hold-harmless.

Note: Totals have been rounded.

The impact of Plan A on 20 selected districts is shown in Table 6-3. Each district would receive a basic state program distribution of approximately $14,500 based on identified educational needs. Due to variations in teacher training and experience, the allocation per instructional unit would vary among sample districts from a high of $14,742 in Forsyth to a low of $14,251 in Dare. In the second tier, required local effort per instructional unit would vary from a high of $7,472 in Dare, the wealthiest district, to a low of $828 in Robeson, the poorest. The highest required local effort for selected districts participating in the equalization program would be $2,989 in Rowan. State equalization aid would range from zero in 12 districts to a high of $2,355 per instructional unit in Robeson. The combination of local required effort and state equalization aid would guarantee each district slightly more than

Table 6-4

Simulated State and Local Revenue per Instructional Unit
Equalization Plan B[1]

District	State Basic Program	Second Tier Required Local	Second Tier State Equalization	Local Leeway	Hold-Harmless	State/Local Total
Dare	$14,551	$7,472	$ 0	$ 0	$395	$22,418
Brunswick	14,439	5,389	0	0	218	20,036
Forsyth	14,742	4,747	248	2,257	0	21,993
Rowan	14,547	3,693	945	305	3	18,784
Buncombe	14,500	3,995	879	1,185	0	19,617
Transylvania	14,469	2,581	980	1,140	0	18,921
Iredell	14,544	2,503	1,178	675	0	18,904
Beaufort	14,508	2,135	1,062	983	0	18,748
Wilson	14,045	2,354	1,069	1,354	0	19,353
Surry	14,487	2,109	1,179	503	0	18,219
Alamance	14,575	2,320	1,183	1,632	0	19,710
Jones	14,543	1,848	1,575	1,165	0	18,494
Randolph	14,576	1,711	1,869	907	0	18,452
Craven	14,551	1,501	1,359	1,044	0	18,454
Halifax	14,517	1,448	1,961	916	0	18,196
Polk	14,886	1,868	1,355	1,484	440	19,501
Caswell	14,489	998	1,539	941	0	17,966
Johnston	14,538	1,113	1,959	1,351	0	18,994
Alexander	14,148	1,148	1,959	700	0	18,044
Robeson	14,465	998	1,807	1,045	0	17,994

[1]Statewide totals are $809,189,000 for state basic program, $180,000,000 for required local effort, $90,000,000 for state equalization, and $1,500,281 for hold-harmless.

Note: Totals have been rounded.

$3,000 per instructional unit in the second tier, or approximately $17,500 per instructional unit from the basic program plus the second tier.

The local leeway column in Table 6-3 represents the 1975-76 county average expenditure above and beyond that required for the second tier equalization program. This local discretionary expenditure would not be equalized by the state. In actuality, the extent of this leeway may vary considerably among school districts within a given county. To prevent districts from receiving less state aid under the simulated state school finance program than the amount actually received in 1976-77, a hold-harmless provision was incorporated into the simulated model. Among the selected districts Dare, Brunswick, Rowan, and Polk would have benefited from this provision. Statewide, 17 counties would receive hold-harmless funds at a total

cost of $3,625,157. Total simulated state/local revenues per instructional unit are given in the last column of Table 6-3. These totals, obtained by summing funds for state basic, state equalization, local required effort, local leeway, and hold-harmless, range among the selected districts from a high of $22,418 in Dare to a low of $18,193 in Surry. Statewide, the range for total state/local revenue is somewhat greater, varying from a low of $17,525 in Alleghany to a high of $23,291 in Mecklenburg. Overall, Plan A is quite effective in targeting state equalization aid to the poorest counties, thereby reducing considerably the disparity among counties in available resources per instructional unit.

Plan B. This plan involves the basic state program, required local effort, and level of state equalization funding as does Plan A. However, the state equalization allocation for each district is computed by multiplying each district's "full equalization" allocation by a constant percentage. In this case, the $60 million state equalization aid is 37.2 percent of the cost of the program defined as "full equalization"; therefore, each district would receive 37.2 percent of its "full equalization" allocation. As depicted in Figure 6-1, Plan B delivers fewer dollars to the poorest districts than Plan A, but permits all districts below the 98th percentile wealth to participate in the equalization program.

Data relating to the effects of Plan B on the selected school districts are presented in Table 6-4. The state basic program aid received by each district is the same under Plan B as under Plan A; the local effort required for each district to qualify for participation in the second-tier equalization program is also the same as in Plan A. While 12 districts receive no equalization aid under Plan A, only Dare and Brunswick receive none under Plan B. Districts receiving little equalization aid per instructional unit under Plan A, such as Buncombe and Dare, receive larger allocations; however, the poorest districts receive smaller allocations. For example, Alexander would receive $2,319 per instructional unit under Plan A or $1,659 per unit under Plan B. Reflecting the smaller equalization allocations to the poorest districts under Plan B, the disparity in total state/local revenues between the richest and poorest districts is increased slightly. For instance, Robeson drops from $18,632 to $17,884 in total state local revenues, while Forsyth increases from $21,746 to $21,988. Dare, Brunswick, and Polk would receive a hold-harmless allocation under Plan B while Rowan would not require hold-harmless aid. Statewide, the cost of the hold-harmless provision would be reduced to $1,565,881, but 17 counties would continue to receive hold-harmless allocations.

The state distribution per instructional unit to each selected district under the current financing method and under Plans A and B are compared in Table 6-5. It is clear that a restructuring of the basic program plus the addition of a $60 million equalization program would have a substantial positive impact on the equity of public school financing in North Carolina. First, no district will receive fewer state dollars under either Plan A or Plan B than under the present method. Second, additional state dollars are directed toward the poorest districts, which are least able to raise revenues in support of public education. Plan A would direct considerably more state aid to the poorer districts than Plan B. However, Plan B would have a substantial equalization effect while permitting nearly all districts to participate in the equalization tier of the state school finance program.

In the preceding pages, two alternative equalization approaches were compared holding required local effort (RLE) and state equalization dollars constant at $150 million and $60 million, respectively. Plan A, based on the leveling-up approach, and Plan B, based on the percentage allocation approach, are models which may be applied at various levels of required local effort and state equalization aid. Changes in any basic element of either model such as the level of required local effort or that of guaranteed wealth hold specific im-

Table 6-5

Comparison of State Distribution per Instructional Unit Based on Alternative Equalization Plans[1]

District	1976-77 [illegible]	Plan A[2]	Plan B[3]
Dare	$14,945	$14,945	$14,945
Brunswick	14,656	14,656	14,656
Forsyth	14,718	14,742	14,984
Rowan	14,996	14,996	15,490
Buncombe	14,369	14,918	15,469
Transylvania	15,452	15,213	15,449
Iredell	14,871	15,377	15,622
Beaufort	15,180	15,567	15,660
Wilson	14,500	15,500	15,734
Surry	14,826	15,581	15,606
Alamance	14,671	15,549	15,706
Jones	15,562	16,316	15,918
Randolph	14,474	15,997	15,744
Craven	14,469	16,052	15,820
Halifax	15,714	16,082	15,777
Polk	16,348	16,348	16,348
Caswell	15,205	16,096	16,044
Johnston	14,462	16,576	16,001
Alexander	15,389	16,765	16,105
Robeson	14,702	16,759	16,011

Equalization Plans:

[illegible]

[illegible]

[illegible]

plications for other components of the model. Data concerning the impact of various required local effort alternatives on the cost of equalization and the level of actual local effort are presented in Table 6-6. The cost of fully equalizing to the 98th percentile wealth level is directly proportional to the level of RLE. For each $100 million of RLE statewide, approximately $107.6 million is necessary to achieve full equalization at the 98th percentile wealth.

The RLE level selected for the simulation of Plans A and B, $150 million, would require $161 million in state equalization aid to fully equalize this local revenue. It would also require eight counties to increase local effort to qualify for participation in the second tier equalization program. Given the current level of taxpayer resistance to increased local property taxes, the moderately low RLE of $150 million was viewed as appropriate for the simulation of alternative equalization approaches. The impact of alternative RLE levels can be seen in Table 6-6. For example, a fully funded equalization program based on an RLE of $200 million would cost approximately $215 million and would require 22 counties to increase local effort above actual 1975-76 levels.

In Table 6-7 the impact of alternative guaranteed wealth levels on the cost of equalization and the extent of county participation is summarized. As the guarantee level is lowered holding RLE constant, there is a gradual decline in the proportion of school districts and students eligible for participation in the equalization program and a corresponding reduction in the cost of equalization. Given an RLE of $200 million, a fully funded program designed to equalize at the 2.4 wealth level would provide equalization aid to 99 percent of North Carolina students at a cost of approximately $215 million. If the guarantee level was changed to 1.2, the cost of equalization would fall to approximately $46 million, and 64 percent of all students in the state would benefit from state equalization aid.

Using the information provided in Tables 6-6 and 6-7, the interrelationships among RLE, guaranteed wealth, and cost of equalization may be examined and appropriate parameters for alternative simulations of equalization plans A and B may be selected.

Table 6-4

Impact of Required Local Effort Alternatives on Cost of Equalization and Actual Local Effort

Required Local Effort (millions)	Cost of Full Equalization (millions)	Counties Above Required Local Effort	Counties Required to Increase Local Effort
$100	$139	96	1
125	164	95	4
150	191	92	8
175	216	87	13
200	243	78	22
225	272	69	31
250	300	55	45
275	326	44	56
300	353	29	67

[illegible] Guaranteed Wealth Index, 50th Percentile.

Table 6-5

Impact of Alternate Guaranteed Wealth Levels on Cost of Equalization

Guaranteed Wealth Index	Counties Above Guaranteed Wealth Index	Counties Required to Increase Local Effort	Cost of Equalization $100 per pupil GWI (millions)	Cost of Equalization $125 per pupil GWI (millions)
25	96	1	$100	$139
30	95	2	106	145
35	93	4	113	151
40	91	6	121	159
45	89	8	129	167
50	87	10	139	176
55	84	13	150	187
60	81	16	161	198
65	78	19	174	211
70	74	23	188	225
75	69	28	203	240
80	64	33	220	257
85	59	38	238	275
90	54	43	258	295
95	49	48	280	317
100	44	53	304	341
105	39	58	330	367
110	34	63	358	395
115	29	68	388	425
120	24	73	420	457
125	19	78	455	492
130	14	83	492	529
135	9	88	532	569
140	4	93	574	611
145	1	96	608	645
150	0	97	619	656
155	0	97	619	656
160	0	97	619	656
165	0	97	619	656
170	0	97	619	656
175	0	97	619	656
180	0	97	619	656
185	0	97	619	656
190	0	97	619	656
195	0	97	619	656
200	0	97	619	656

Conclusions

The development of a fixed-level equalization program requires that the following basic factors be addressed: (a) specification of a required local effort standard, (b) determination of an appropriate state funding level, and (c) selection of a method for distributing state equalization aid among counties. These factors are interdependent in that an increase in required local effort would necessitate a corresponding increase in state equalization aid to achieve full equalization of the local effort requirement. Given the present level of taxpayer resistance to increased local property taxes and the tradition of local control over the level of local effort, the standard of local effort required in the second tier equalization program should be set at a reasonably low level. This would not require numerous counties to increase existing property tax rates. A required local effort of $150 million statewide is recommended because it would require only 8 percent of North Carolina counties to increase local effort above 1975-76 levels. This amount would ensure continued local participation in financing the public schools at a reasonable level of effort.

The cost to the state of fully equalizing the $150 million required local effort at the 98th percentile fiscal capacity level would be approximately $161 million. This amount would require an increase of approximately 18 percent in state funding for public education. The recommended initial level of state equalization aid, $60 million, would provide for considerable fiscal equalization while limiting the increase in state funding to approximately 7 percent. Given a level of state equalization aid below that required for full fiscal equalization, two alternative prorated methods could be employed in the distribution of state equalization aid. Plan A, using a leveling-up approach, would provide the greatest amount of equalization by targeting state dollars to the poorest counties first. However, this plan would exclude several major urban counties. Plan B would provide each county with a given percentage of its full equalization entitlement, and all but the wealthiest two counties would receive equalization aid. Plan A is recommended since it would provide the greatest amount of equalization per dollar of state equalization aid. Under the recommended plan, 88 of the 100 counties of North Carolina would be eligible for state equalization aid; the poorest county would receive approximately $123 per ADM or $2,443 per instructional unit in state aid from the second tier equalization program.

References

Mort, P.R., and Reusser, W.C. *Public School Finance*. New York: McGraw-Hill, 1951.

Tron, E.O. *Public School Finance Programs, 1975-76*. Washington, D.C.: U.S. Government Printing Office, 1976.

Appendices

APPENDIX A

Districts in Sample Used for Measures of Local Supplements for Five Public School Positions

Mountain	Piedmont	Coastal	Urban
Asheville	Alamance	Beaufort	Forsyth
Buncombe	Anson	Bladen	Greensboro
Burke	Asheboro	Carteret	Mecklenburg
Caldwell	Chapel Hill	Chowan	Wake
Cherokee	Davidson	Currituck	
Graham	Durham	Edgecombe	
Haywood	Eden	Johnston	
Henderson	Guilford	Lenoir	
Jackson	High Point	Nash	
McDowell	Iredell	New Hanover	
Macon	Lexington	Onslow	
Polk	Montgomery	Perquimans	
Rutherford	Randolph	Sampson	
Transylvania	Richmond	Tarboro	
Wilkes	Thomasville	Wilson	

N=49

APPENDIX B

Districts in Sample for Study of Relationships of Wealth, Size, and Geographic Location to Curricular Offerings

Alamance	Concord	Hyde	Richmond
Albemarle	Currituck	Jackson	Roanoke Rapids
Anson	Davie	Kinston	Rutherford
Ashe	Duplin	Macon	Salisbury
Asheville	Durham	Madison	Scotland
Beaufort	Elkin	Martin	Surry
Bertie	Fayetteville	McDowell	Swain
Brunswick	Franklinton	Mecklenburg	Thomasville
Buncombe	Gaston	Mitchell	Transylvania
Burke	Gates	Montgomery	Tryon
Burlington	Goldsboro	Monroe	Tyrrell
Caldwell	Graham	Mooresville	Vance
Camden	Granville	New Hanover	Warren
Carteret	Greene	Northampton	Watauga
Caswell	Greensboro	Onslow	Wayne
Chapel Hill	Harnett	Orange	Wilkes
Cherokee	Haywood	Pamlico	Wilson
Clay	Henderson	Person	Yadkin

N=72

APPENDIX C

Districts in Sample for Cost Analysis of Basic and Compensatory, Vocational, and Exceptional Programs

Asheboro	Greensboro	Kings Mountain	Salisbury
Burke	Greenville	Moore	Shelby
Chapel Hill	Haywood	New Bern	Tarboro
Cumberland	Hertford	New Hanover	Transylvania
Davie	High Point	Pitt	Union
Forsyth	Iredell	Roanoke Rapids	Warren
Gaston	Jackson	Rutherford	Wilkes

N=28

APPENDIX D
CAPITAL OUTLAY

North Carolina, along with many states, has placed a large proportion of financial responsibility for the construction of public school facilities with local administrative units. However, the state has made increasingly substantial contributions. Since 1949 North Carolina has approved $475 million in bond referendums for public school construction. In addition, the General Assembly has appropriated $25 million.

The need to replace educationally obsolete and structually unsound buildings and to make major renovations of existing facilities continues to place a financial strain on local administrative units. This burden has been compounded by societal changes that have caused shifts in student population, necessitated the merger of administrative units, and demanded more and better services.

Status of Public School Facilities

Most school administrative units in North Carolina have made substantial progress in construction of new buildings and improving old buildings. Many school facilities are in use which were constructed during the state's major building program in the 1920s. Approximately 24 percent of the permanent teaching stations in the state are located in buildings constructed prior to 1939. These 12,000 teaching stations have a capacity for approximately 270,000 elementary and secondary students.

Most schools constructed prior to 1939 are non-fire resistant multistory buildings. Based upon conservative estimates, it would cost approximately $648 million to replace 80 percent of the pre-1939 teaching stations. During 1940 through 1949, approximately 6 percent of the permanent teaching stations were constructed. These have a capacity for approximately 67,000 students. Some of these buildings are fire resistant, but many are similar to pre-war construction. To replace 80 percent of the teaching stations constructed in the 1940s would cost approximately $60 million.

Approximately 30 percent of all permanent teaching stations in the state are housed in buildings which were constructed between 1950 and 1959. Many of these facilities are in need of renovation in order to conserve energy and to provide facilities which are more appropriate for current instructional programs. Recent data indicate that the cost to renovate or improve these facilities requires one-fourth to one-half of the cost of new construction. Based on a cost of $1,200 per student it would require approximately $326 million to renovate 80 percent of the facilities constructed between 1950 and 1959. Some buildings which were constructed in the 1960s and 1970s would benefit from renovation in order to conserve energy and to provide accessibility to the handicapped.

Table D-1

Permanent Teaching Stations in North Carolina, 1977

Construction Date	Permanent Teaching Stations	Percent of Teaching Stations in Multistory Buildings
Pre-1930	8,742	82%
1930-1939	3,337	57%
1940-1949	2,976	51%
1950-1959	15,008	30%
1960-1969	11,836	30%
1970-1977	8,074	40%
Total	50,051	48%

Source: Division of School Planning, State Department of Public Instruction, unpublished data, October, 1977.

A recent inventory of permanent teaching stations in the state indicated that total capacity is approximately the same as the total number of students in the state. Table D-1 indicates the number of permanent teaching stations in the state with construction date and percentage of teaching stations located in multistory buildings.

Based on its statewide studies and the studies of local administrative units, the State Department of Public Instruction has estimated that more than one billion dollars is needed in 1978 to house all students in the state in safe, attractive facilities which are suitable for long-range use.

Accessibility for the Handicapped

Since 1973 the North Carolina Building Code has required that all new public buildings, including schools, be accessible to the handicapped. A recent survey conducted by the State Department of Public Instruction revealed that approximately 87 percent of all the school facilities constructed prior to 1973 will require some modification to comply with the building code. Since 46 percent of all teaching stations are located in multistory buildings, the added costs to make those facilities accessible to the handicapped will place a heavy financial strain on local administrative units.

Programs for Exceptional Children

Programs for exceptional children will continue to place a heavy demand on capital outlay budgets. The number of exceptional children being served in the state has increased from 2,175 in 1949-1950 to 117,648 in 1977-78. The State Department of Public Instruction estimates that there are approximately 148,000 children in the state who are entitled to be served under the mandates of Public Law 94-142 and North Carolina House Bill 824. Few public school facilities in the state have been planned specifically for exceptional children. Trainable Mentally Retarded (TMR) programs and Educable Mentally Retarded (EMR) programs are frequently placed in traditional classrooms which lack adequate spaces and appropriate utilities. Resource teachers for the learning disabled, hearing impaired, and speech impaired are frequently asked to share standard classrooms. They may be housed in mobile units or temporary spaces with inadequate acoustical treatment and inappropriate accommodations.

Inappropriate Facilities

Public demands have caused the federal government, the state government, and local boards of education to formulate many special projects and programs which require special instructional spaces. As existing schools have found ways to accommodate new programs and projects, they have accordingly reduced the amount of space available for regular classroom instruction. Also, with the consolidation of high schools, elementary and junior high students have been assigned to former high school facilities which require renovation.

Energy Conservation

Renovations to conserve energy represent new needs and new costs for each school. Approximately one-third of all school units are participating in a state energy conservation program which was begun in 1975. The program provides each participating school with a monthly computer printout showing the amounts and costs of all energy sources plus estimated requirements for that particular month based upon recorded building characteristics, degree days, and occupied hours.

As more schools join the program, a record keeping system will have been established that will provide comparative data for each administrative unit. Local school administrators, in cooperation with appropriate state education officials, will use these data to select facilities that will provide earliest return for capital outlay funds expended. Data will be available through these printouts to provide consulting engineers and architects with necessary technical information to plan capital outlay projects to conserve energy.

A 16 percent savings in energy costs could be

realized by 1980 if all local administrative units implemented the statewide energy conservation program. This could mean a savings of approximately $8 million per year for the state. As local school administrators assess their school building needs, the conservation of energy should be given a top priority.

Procedures for Use of Capital Outlay Monies

Construction of a school facility depends on the cooperation of four governing bodies: (a) the local board of education, (b) the board of county commissioners, (c) the State Superintendent of Public Instruction, and (d) the State Board of Education.

The local board of education determines whether new buildings are needed and where they shall be located. A school site cannot be purchased until the board of county commissioners approves the amount to be spent. The capital outlay budget for each year must be approved by the county commissioners.

Once a site is decided upon and county commissioners approve the purchase, the local board of education can have construction plans prepared. G.S. 115-130 states, "Boards of education shall not invest any money in any new building that is not built in accordance with plans approved by the state superintendent as to structural and functional soundness, safety, and sanitation." The State Board of Education approves the plans for expenditure after they are reviewed by a 13-member panel. After thorough planning, bids are let and when bids are within the budgeted amount, the Division of School Planning recommends that state funds be allocated. Approval by the State Board completes the process. The Division of School Planning participates in the final inspection of the project and authorizes the final release of funds.

Financing Public School Facilities

In addition to the source of revenue at the local level, funds for facilities may be made available from the state either through grants, bond issues, or loans. Some federal revenue sharing funds have been utilized by local school and governmental officials to support school construction projects.

Local Sources of Funding

A local board of county commissioners can make an annual appropriation for capital outlay, provided the request is included in the annual budget request submitted by the local board of education. At the same time that the capital outlay budget is filed, a supplemental capital outlay budget must be filed to request that a sufficient tax levy be made by the tax levying authority, not in excess of the rate voted by the people in the school administrative unit. Recent statutory authority was granted to permit local voters to vote a supplemental tax for capital outlay in the same manner as for current expense, within certain limitations.

Upon request of a local board of education, the board of county commissioners can submit for voter approval a definite amount to be used for specified school construction projects. The statutory authority to authorize a bond issue is determined by a fixed percentage of the assessed valuation of property in the county. If the voters approve, the bonds are sold and funds placed in the local capital outlay budget according to rules and procedures established by the Local Government Commission in the office of the State Treasurer.

State Sources of Funding

The state has also provided funds to local school administrative units. It has both loaned and granted funds for capital outlay. As the result of the backlog of building needs created by the lack of materials and labor during World War II, the North Carolina General Assembly appropriated $25 million from the surplus accumulated during the war years.

The State Literary Fund is a permanent loan fund whose operation is governed by statute. The 1921, 1923, and 1925 General Assemblies each established a $5 million loan fund for capital outlay. The 1927 General Assembly added $2.5 million to

the fund. Perhaps due to statutory limitation or various other reasons, there has been limited use of these funds over the years. Records in the office of the Controller, State Department of Education, show that State Literary Fund loans were made to only eight local school administrative units from July 1, 1972, through June 30, 1977. The total of the loans amounted to $758,328.33. This loan fund, at an annual interest rate of 4 percent payable in ten yearly installments, provides the administrative units of the state with an accessible source of funds, especially for small construction projects.

Since 1949 the General Assembly has submitted various bond issues for capital outlay to the voters of the state. All issues submitted were approved by the voters, including $25 million in 1949; $50 million in 1953; $100 million in 1963; and $300 million in 1973. The state has provided $234,228,-955.96 or approximately 29 percent of the total expenditures for capital outlay in the six years from 1970 to 1977. The figures support the opinion that the availability of state bond funds stimulates local efforts to provide additional funds for capital outlay projects. Therefore, the Commission recommends:

> That the state, through periodic issue of state bonds, continue to provide a reasonable proportion of statewide facility costs. Based on precedent, it would seem that the state's reasonable proportion will fall between 25 and 40 percent of the overall cost of school construction. The next statewide bond referendum should be held in 1979 or as soon as practical thereafter. School facility funds should be allocated to each school district on the basis of average daily membership.

Federal Sources of Funding

Federal money may be spent on capital outlay under certain circumstances and conditions. Public Law 81-815, for instance, allocated federal funds to local administrative units heavily impacted by the children of federal employees. From 1950 to 1977, North Carolina received approximately $17.7 million from this fund. In addition, the Appalachian Regional Commission made $13 million available to certain local administrative units from 1966-1976. Although North Carolina is within the Coastal Plains Regional Commission, no Commission funds have been made available yet to public school construction projects. Several other federal categorical aid programs have provisions for expenditures on capital outlay, particularly for instructional apparatus and furnishings.

Local Debt Service Obligations

Many local adminsitrative units have turned to the sale of bonds, with the approval of the voters of the unit, to finance capital outlay projects. The sale of these bonds creates a debt service obligation. Since 1972 local administrative units have successfully passed 29 bond issues for public school facilities totaling $137,575,000. During this same period, 18 issues totaling $95,687,919 were not approved.

Six administrative units show no indebtedness for public school facilities as of June 30, 1977; while two units, Currituck and Swain, reported a per pupil indebtedness in excess of $1,000 per pupil. The wide range of indebtedness may be attributed to several factors. Many units are financing school building projects on a pay-as-you-go plan. Prevailing interest rates and other economic conditions may have been a determining factor in placing bond issues before voters. Moreover, the building needs of the administrative units and the ability of the county to incur debt is of great significance in determining whether to borrow funds to finance facilities.

Allocating State Funds for Construction

The issue of equal educational opportunity for students inevitably raises the issue of the ability of administrative units to fund such opportunities. Previous allocations of state bond money have been allocated to each administrative unit on the basis of per capita average daily membership. Consideration should be given to the distribution of any

future state bond monies partly on a per pupil basis and partly on the basis of need, as defined by the State Board of Education, as a means of addressing equality of opportunity.

The State Superintendent of Public Instruction should establish objective standards for school physical plants, taking into consideration the subjective existing standards which have been used for evaluating long-range building plans. As a minimum, these standards should include ranges for number of square feet per pupil, ranges for number of pupils per school, and safe construction principles. After review and adoption of these standards by the State Board of Education, the State Department of Public Instruction would survey the state and report various needs to the State Board. These categories might include (a) replacement of temporary classrooms, (b) replacement of non-fire resistant structures, (c) replacement or modification of energy inefficient structures, (d) additions to structurally sound buildings to make them educationally adequate, and (e) modification of buildings for use by the handicapped.

The survey should be conducted every three years with results reported to the State Board of Education and to the General Assembly of North Carolina. Based on results, the State Board could periodically assess the capital outlay needs of the state. Assuming that the General Assembly submitted a bond issue for a ratification and the voters approved it, the funds would be allotted according to the same procedure now in effect. The State Department of Public Instruction should continue to assist local administrative units with projects upon which state bond monies are spent. Therefore, the Commission recommends:

That all school construction projects approved by the State Board of Education meet qualitative and quantitative standards for cost effectiveness and design. Regular reports and inventories should be made on the status of school facilities to the State Board of Education and the General Assembly.

APPENDIX E

Writers of Position Papers

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APPENDIX F

Study Committee Members

The Commission authorized three study committees which met regularly with representative Commission members in various geographical locations in the state. Members of the committees assisted the Commission by expressing their views about significant questions under study by the Commission and making recommendations to the Commission regarding local opinions on school finance.

J. Garner Bagnal, *Statesville*
Vann J. Bass, *Middlesex*
Randy Britton, *Ahoskie*
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Mrs. Greta Connor, *Salisbury*
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Ray Taylor, *West Jefferson*
Lindsay R. Whitehurst, *Tarboro*
Chan Wilson, *Calypso*

APPENDIX G

Recognition of Special Contribution

Appreciation is expressed to the following persons and groups, among others, who assisted the Commission and made contributions to the accomplishment of its work.

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J.A. Porter, Jr., Controller, North Carolina Department of Public Education

William W. Peek, Assistant to the State Superintendent, North Carolina Department of Public Instruction

Frank B. Neal, Member, Governor's Commission on Public School Finance (June, 1977—January, 1978)

Dr. Gerald D. James, Executive Director, Governor's Commission on Public School Finance (September, 1977—June, 1978)

David Weilmuenster, Statistician, Governor's Commission on Public School Finance (October, 1977—February, 1978)

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North Carolina Association of County Commissioners

North Carolina Association of Educators

National Association of Educators

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Superintendents of local administrative units and their staffs

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In case of questions or need for further information, please contact the office of the Governor's Commission on Public School Finance, Education Building, Raleigh, North Carolina. Also, a summary of this report is available upon request.